ORDER NO.VMD9903006C2

Service Manual

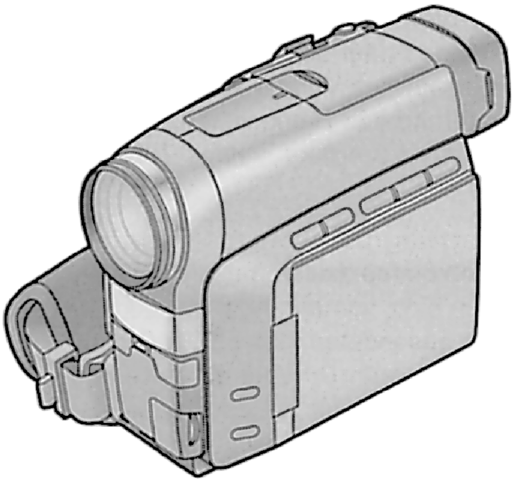
Digital Video Camera/Recorder

Panasonic Mini DV PAL

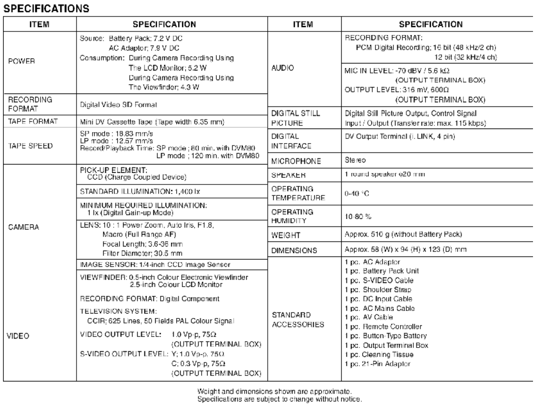
NV-DS33EG/B

VOL.1

Q2-MECHANISM



SPECIFICATIONS



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: Battery Pack; 7.2 V DC AC Adaptor; 7.9 V DC Consumption: During Camera Recording Using The LCD Monitor; 5.2 W During Camera Recording Using The Viewfinder; 4.3 W
RECORDING FORMAT	Digital Video SD Format
TAPE FORMAT	Mini DV Cassette Tape (Tape width 6.35 mm)
TAPE SPEED	SP mode : 18.83 mm/s LP mode : 12.57 mm/s Record/Playback Time: SP mode ; 80 min. with DVM80 LP mode ; 120 min. with DVM80
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lx
	MINIMUM REQUIRED ILLUMINATION: 1 lx (Digital Gain-up Mode)
	LENS: 10 : 1 Power Zoom, Auto Iris, F1.8, Macro (Full Range AF) Focal Length; 3.6-36 mm Filter Diameter; 30.5 mm
	IMAGE SENSOR: 1/4-inch CCD Image Sensor
	VIEWFINDER: 0.5-inch Colour Electronic Viewfinder 2.5-inch Colour LCD Monitor
VIDEO	RECORDING FORMAT: Digital Component TELEVISION SYSTEM: CCIR; 625 Lines, 50 Fields PAL Colour Signal VIDEO OUTPUT LEVEL: 1.0 Vp-p, 75Ω (OUTPUT TERMINAL BOX) S-VIDEO OUTPUT LEVEL: Y; 1.0 Vp-p, 75Ω C; 0.3 Vp-p, 75Ω (OUTPUT TERMINAL BOX)

ITEM	SPECIFICATION
AUDIO	RECORDING FORMAT: PCM Digital Recording; 16 bit (48 kHz/2 ch) 12 bit (32 kHz/4 ch)
	MIC IN LEVEL: -70 dBV / 5.6 kΩ (OUTPUT TERMINAL BOX) OUTPUT LEVEL: 316 mV, 600Ω (OUTPUT TERMINAL BOX)
DIGITAL STILL PICTURE	Digital Still Picture Output, Control Signal Input / Output (Transfer rate: max. 115 kbps)
DIGITAL INTERFACE	DV Output Terminal (i. LINK, 4 pin)
MICROPHONE	Stereo
SPEAKER	1 round speaker φ20 mm
OPERATING TEMPERATURE	0-40 °C
OPERATING HUMIDITY	10-80 %
WEIGHT	Approx. 510 g (without Battery Pack)
DIMENSIONS	Approx. 58 (W) x 94 (H) x 123 (D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack Unit 1 pc. S-VIDEO Cable 1 pc. Shoulder Strap 1 pc. DC Input Cable 1 pc. AC Mains Cable 1 pc. AV Cable 1 pc. Remote Controller 1 pc. Button-Type Battery 1 pc. Output Terminal Box 1 pc. Cleaning Tissue 1 pc. 21-Pin Adaptor

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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⚠ WARNING
This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. INTRODUCTION

1.1. INTRODUCTION1

This service manual contains technical information which will allow service personnel's to understand and service this model.Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

Note 1:
These movie camera uses AC Adaptor is VW-AD7E/B/A.
The service manual for AC Adaptor is separate volume.
Order number for AC Adaptor-----VW-AD7E/B/A : VMD9807039C8

Note 2:
This service manual does not contain the following information, because of the impossibility of sevicing at component level.

1. **Schematic Diagram, Block Diagram and C.B.A. of Main C.B.A. & Sub C.B.A.**
2. **Parts List for individual parts of Main C.B.A. & Sub C.B.A.**
3. **Exploded View and Parts List for individual parts of Mecha. Unit**

When a part replacement is required for repairing Main C.B.A., Sub C.B.A. and/or Mecha. Unit, replace the assembly parts.
The following circuits are contained in Main C.B.A.

1. **Main Connection Circuit**
2. **Drive Circuit**
3. **Sound Title Circuit**
4. **Video 1 Circuit**
5. **Video 2 Circuit**
6. **Control Circuit**
7. **Digital Interface Circuit**
8. **Speaker Drive Circuit**

The following circuits are contained in Sub C.B.A.

1. **Sub Connection Circuit**
2. **Sensor Circuit**
3. **Process Circuit**
4. **LCD Circuit**
5. **Power Circuit**
6. **Lens Drive Circuit**

2. CAUTION FOR AC CORD (VJA0940 TYPE)

2.1. INFORMATION FOR YOUR SAFETY

IMPORTANT
Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

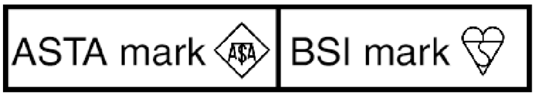
CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY
DO NOT REMOVE THE OUTER COVER
To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.2. CAUTION FOR AC MAINS LEAD

For your safety, please read the following text carefully.
This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362
Check for the ASRA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

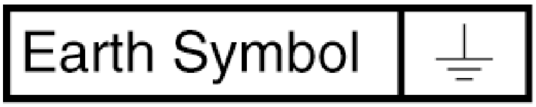
If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.
If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safety.
There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.2.1. IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

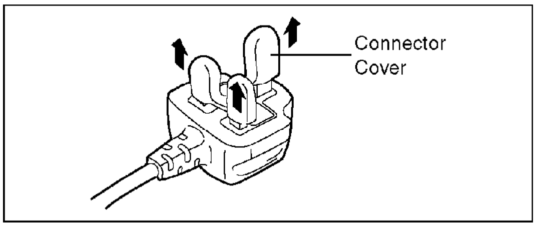
Blue	**Neutral**
Brown	**Live**

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.
Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



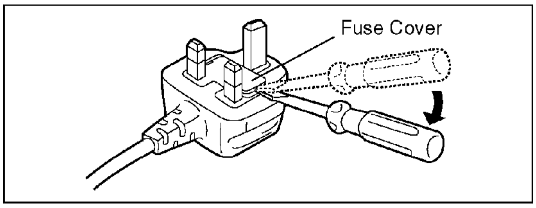
2.2.2. Before use

remove the Connector Cover as follows.

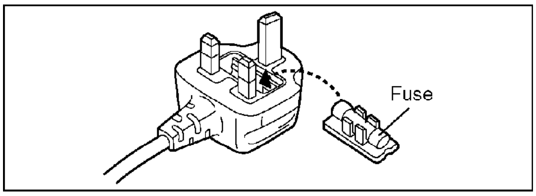


2.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



3. SERVICE CAUTION

3.1. EEPROM DATA FOR SPARE PARTS OF THE MAIN C.B.A.

When the Main C.B.A. is replaced, the fixed and average data must be changed by Tatsujin kit according to the Movie Camera's suffix.
Then, confirm and/or adjust the VTR and Camera adjustment one by one.

3.2. SERVICE EXTENSION CABLES.

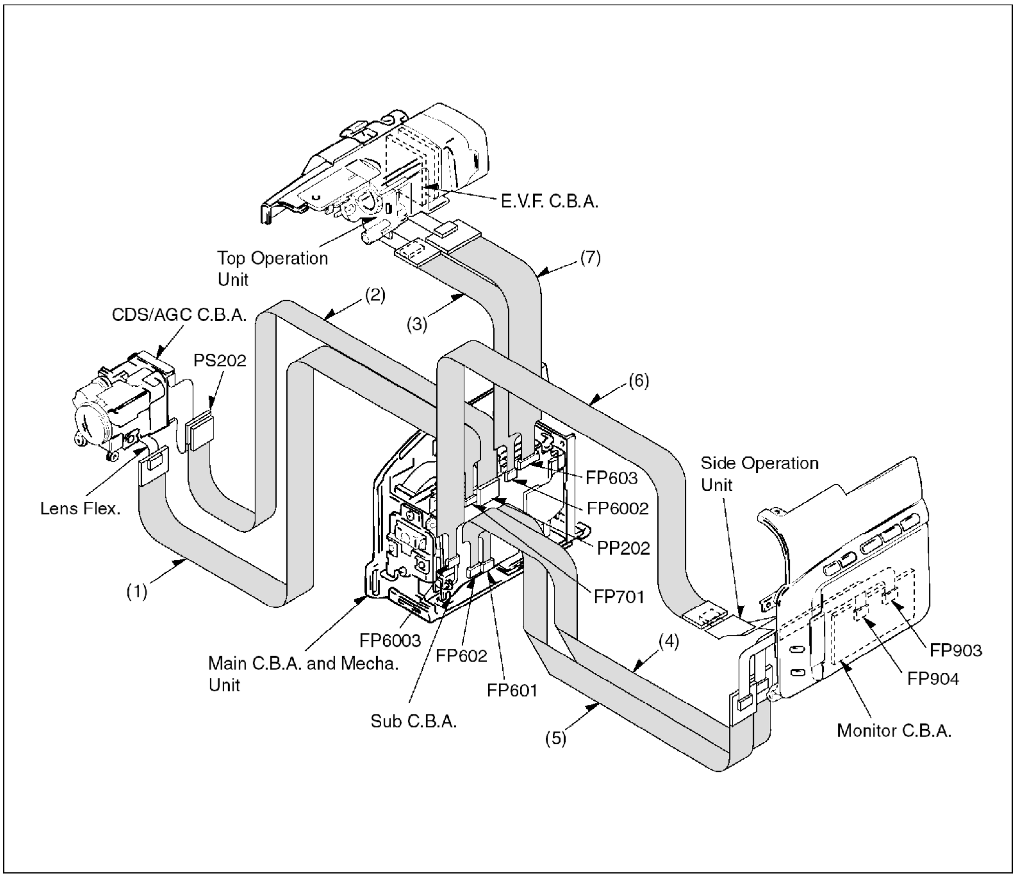
This models is required the following extension cables for all connections.

Note 1:
Use the following extension cables when checking or adjusting individual circuit boards except module Parts. (Main C.B.A., Sub C.B.A. and Mecha. Unit)

Ref.	Part No.	Pin	Part Name	Connection	Q'ty	Remarks
(1)	VFK1442	21	Flat Cable	FP701(Sub)-Lens Flex.	1	
(2)	VFK1453	40	Flat Cable	PP202(Sub)-PS202(CDS/AGC)	1	
(3)	VFK1452	17	Flat Cable	FP6002(Sub)-Top Operation Flex.	1	
(4)	VFK1452	17	Flat Cable	FP602(Sub)-FP904(Monitor)	1	
(5)	VFK1452	17	Flat Cable	FP601(Sub)-FP903(Monitor)	1	
(6)	VFK1440	10	Flat Cable	FP6003(Sub)-Side Operation Flex.	1	
(7)	VFK1443	18	Flat Cable	FP603(Sub)-E.V.F.	1	

How to use extension cables.

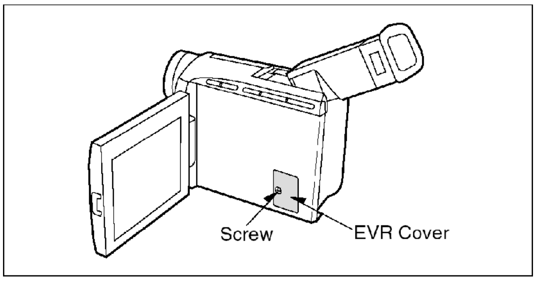
Fig. T1-1


E.V.F. C.B.A.
Top Operation Unit
(7)
(2)
(3)
CDS/AGC C.B.A.
PS202
(6)
FP603
FP6002
PP202
FP701
Side Operation Unit
Lens Flex.
(1)
FP6003
Main C.B.A. and Mecha. Unit
FP602
FP601
Sub C.B.A.
(4)
(5)
FP903
FP904
Monitor C.B.A.

4. PREPARATION FOR ELECTRICAL ADJUSTMENT

1. **Remove Screw and EVR Cover which is located on the Side (R) Base Unit as follows.**
2. **Then connect the following cables as shown in FIg. E2.**

Fig. E1


Screw
EVR Cover

Part No.	Part Name	Q'ty	Remarks
VFA0272	**232C(M3)I/F Cable**	**1**	
VFK1308E	**Measuring Board**	**1**	
VFK1309	**EVR Connector Board**	**1**	
VFK1317	**30 Pin Flat Cable**	**2**	
VJA0941	**DC Output Cable**	**1**	**For AC Adapter**
VFK1164TAR3A	**Setup Ring (φ 30.5 mm)**	**1**	**For Collimator**
VFK1309EX	**Connection Adapter**	**1**	

Fig. E2

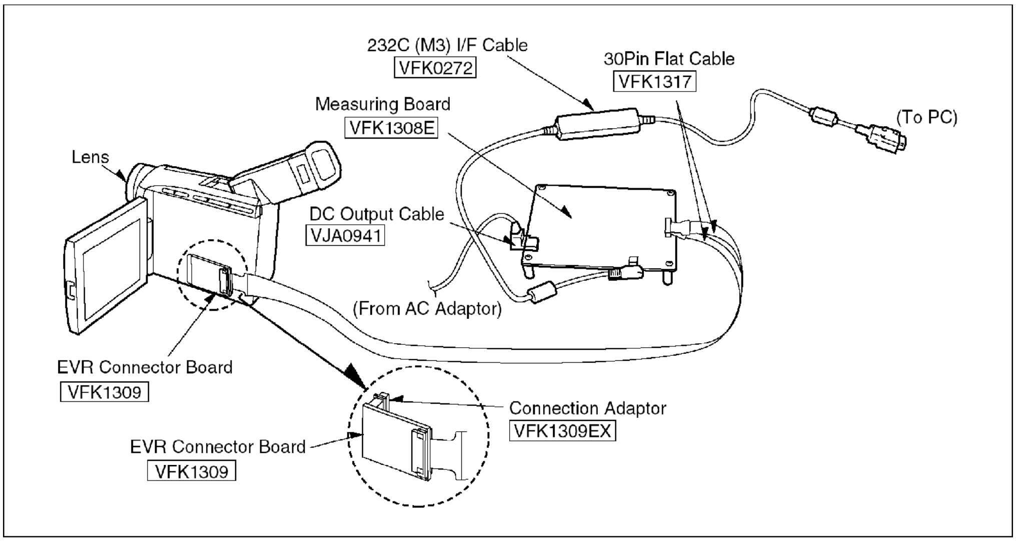
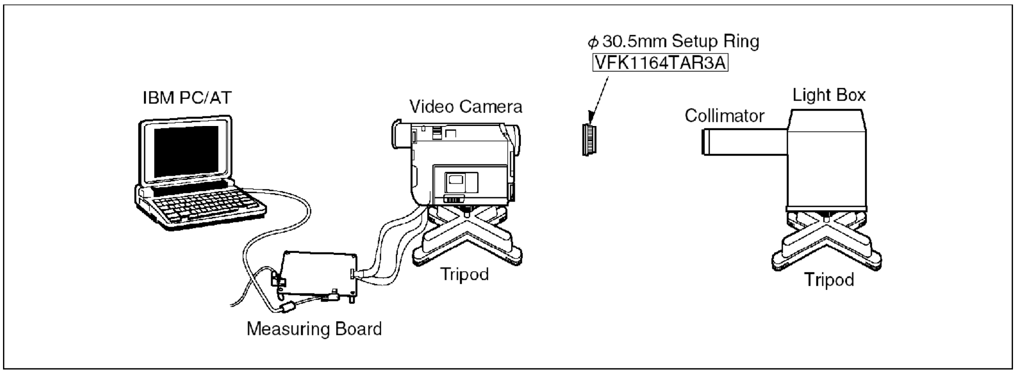
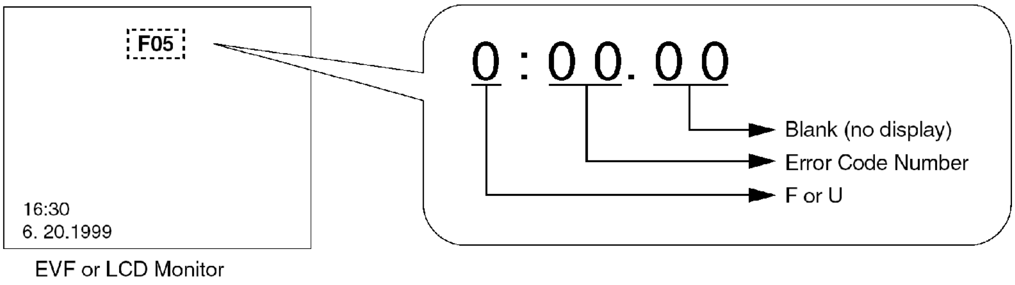

232C (M3) I/F Cable
VFK0272
30Pin Flat Cable
VFK1317
Measuring Board
VFK1308E
(To PC)
Lens
DC Output Cable
VJA0941
(From AC Adaptor)
EVR Connector Board
VFK1309
Connection Adaptor
VFK1309EX
EVR Connector Board
VFK1309

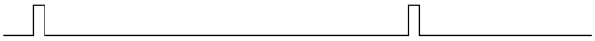
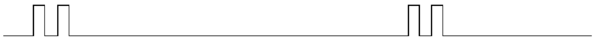
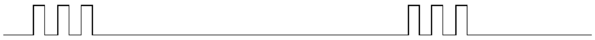
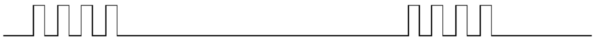
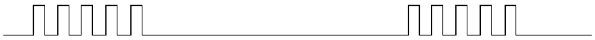
Fig. E3


φ 30.5mm Setup Ring
VFK1164TAR3A
IBM PC/AT
Video Camera
Light Box
Collimator
Tripod
Tripod
Measuring Board

5. SERVICE MODE

When undesirable conditions occurred, the error code is displayed on the EVF or LCD Monitor. Also, the Camera LED is flashed according to the error code as follows.



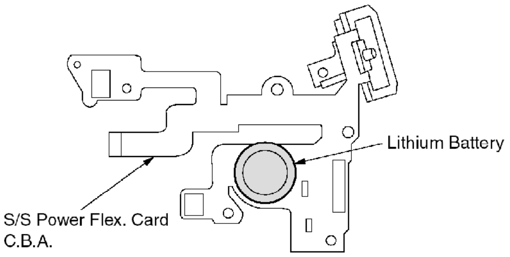
DISPLAY	CONDITION	POWER OFF TIMING / POWER LED FLASHING TIMING
F01	T-Reel Lock	After 1 minute flashing the LED 
F02	S-Reel Lock	After 1 minute flashing the LED 
F03	Unloading Lock	After 1 minute flashing the LED 
F04	Loading Lock	After 1 minute flashing the LED 
F05	Cylinder Lock	After 1 minute flashing the LED 
F31	Data Transmission Error	Not turning OFF
F51	Focus Motor Lock	Not turnig OFF Power LED is flashed at 1 Hz timing
F52	Zoom Motor Lock	Not turnig OFF Power LED is flashed at 1 Hz timing
U10	Dew Detection	After 18 seconds flashing the LED Power LED is flashed at 1 Hz timing
U11	Head Clogging	Not turning OFF

6. HOW TO REPLACE THE LITHIUM BATTERY (PROCEDURE)

1. Remove the S/S Power Flex. Card C.B.A. from Grip Case Unit. (Refer to Disassembly Procedures.)

2. Unsolder the Lithium Battery “VL1220/1FC” and then replace the new one. (See Fig. B1.)

Fig. B1



Note:
The lithium battery is a critical component. (Type No.: VL1220/1FC Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig hándtering.
Udskiftning má kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

7. GENERAL DESCRIPTIONS

8. ADJUSTMENT PROCEDURES

8.1. DISASSEMBLE FLOW CHART

This flow chart indicates the disassembly steps the cabinet parts, C.B.A. and Mecha. Unit in order to access to be serviced. When reinstalling, perform the steps in the reverse order.

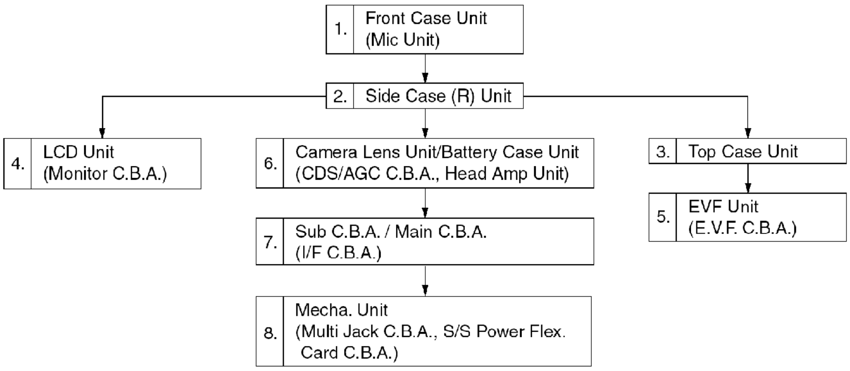
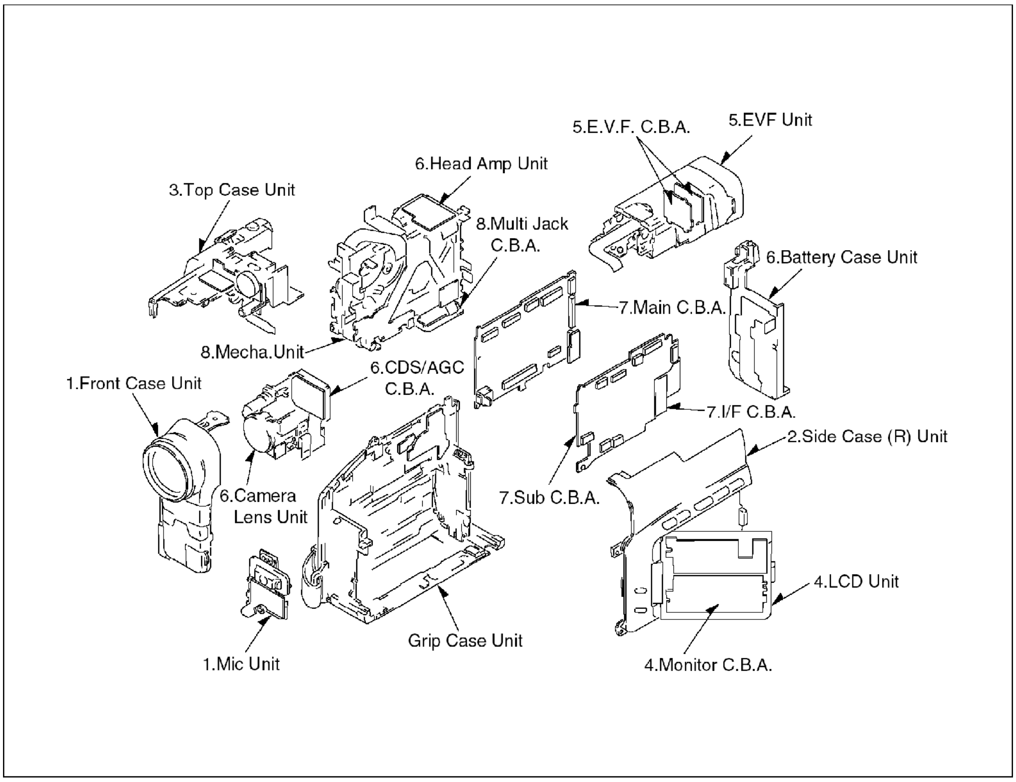

1. Front Case Unit (Mic Unit)
2. Side Case (R) Unit
4. LCD Unit (Monitor C.B.A.)
6. Camera Lens Unit/Battery Case Unit (CDS/AGC C.B.A., Head Amp Unit)
3. Top Case Unit
5. EVF Unit (E.V.F. C.B.A.)
7. Sub C.B.A. / Main C.B.A. (I/F C.B.A.)
8. Mecha. Unit (Multi Jack C.B.A., S/S Power Flex. Card C.B.A.)

Fig. F1


5.E.V.F. C.B.A.
5.EVF Unit
6.Head Amp Unit
3.Top Case Unit
8.Multi Jack C.B.A.
6.Battery Case Unit
7.Main C.B.A.
8.Mecha.Unit
6.CDS/AGC C.B.A.
1.Front Case Unit
7.I/F C.B.A.
2.Side Case (R) Unit
6.Camera Lens Unit
7.Sub C.B.A.
4.LCD Unit
Grip Case Unit
1.Mic Unit
4.Monitor C.B.A.

8.2. DISASSEMBLY PROCEDURES

Flow-Chart for Disassembly Procedure

No.	Item/Part	Fig.	Removal (Screw & Other)
1.	Front Case Unit	Fig. 1	Remove the DV Cover and Grip Belt Unit. 2-Screws (A) 1-Screws (B) 2-Screws (C) Remove the Front Case Unit. 2-Screws (D) Disconnect FP4801. Remove the Mic Unit.
2.	Side Case (R) Unit	Fig. 2	3-Screws (E/F) 5-Screws (G) 3-Screws (H/I/J) Disconnect FP601/FP602/FP6003. Unhook---(a) Remove the Side Case (R) Unit.
3.	Top Case Unit	Fig. 2	2-Screws (K/L) Disconnect FP6002/FP603. Remove the Top Case Unit.
4.	LCD Unit	Fig. 3	2-Screws (M/N) 3-Screws (O) Remove the LCD Case Unit (upper). 2-Screws (P/Q) Remove the Flex. Fixing Piece. Disconnect the FP905 and remove the Sensor Flex. Disconnect the following Connectors. FP902/FP903/FP904. Unhook---(b) Remove the Monitor C.B.A.
5.	EVF Unit	Fig. 4-1	2-Screws (R) Remove the EVF Unit from Top Case Unit. Remove the Window cover. Remove the EVF Slide Case. 2-Screws (S)
		Fig. 4-2	Remove the EVF Click Spring. 1-Screw (T) Remove the EVF Hinge Unit. Remove the E.V.F. C.B.A.
6.	Camera Lens Unit / Battery Case Unit	Fig. 5	2-Screws (U) Disconnect FP701/PP202. Remove the Camera Lens Unit. / 2-Screws (V) Disconnect FP1001. Remove the Battery Case Unit.

No.	Item/Part	Fig.	Removal (Screw & Other)
7.	Sub C.B.A./Main C.B.A.	Fig. 6-1	1-Screw (W) Disconnect PS702/PS1002. Unhook---(c) Remove the Sub C.B.A. 2-Screws (X) Disconnect the following Connectors. PP1001/PP3002/FP1002/FP2201 FP2202/FP2203/FP2204/FP3201. Unhook---(d) Remove the Main C.B.A.
8.	Mecha. Unit	Fig. 7-1	Open the Cassette Cover (S). Push the Lock Lever. Open the Cassette Cover (C). 6-Screws (Y/Z)
		Fig. 7-2	Remove the Mecha. Unit.

Fig. 1

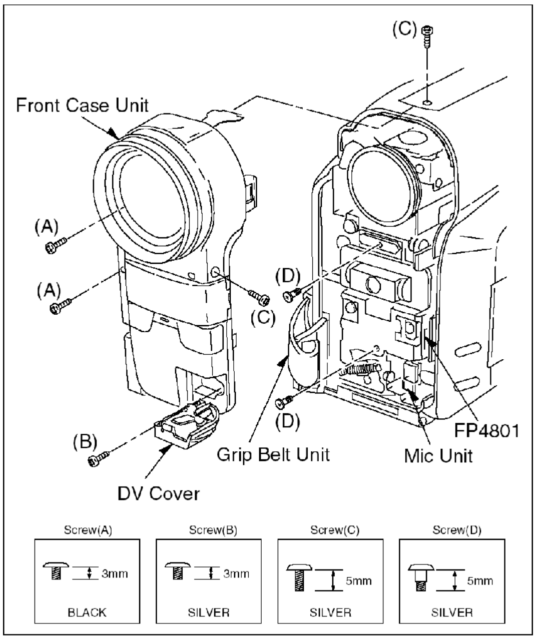

(C)
Front Case Unit
(A)
(A)
(D)
(C)
(D)
(B)
Grip Belt Unit
FP4801
Mic Unit
DV Cover
Screw(A)
3mm
BLACK
Screw(B)
3mm
SILVER
Screw(C)
5mm
SILVER
Screw(D)
5mm
SILVER

Fig. 2

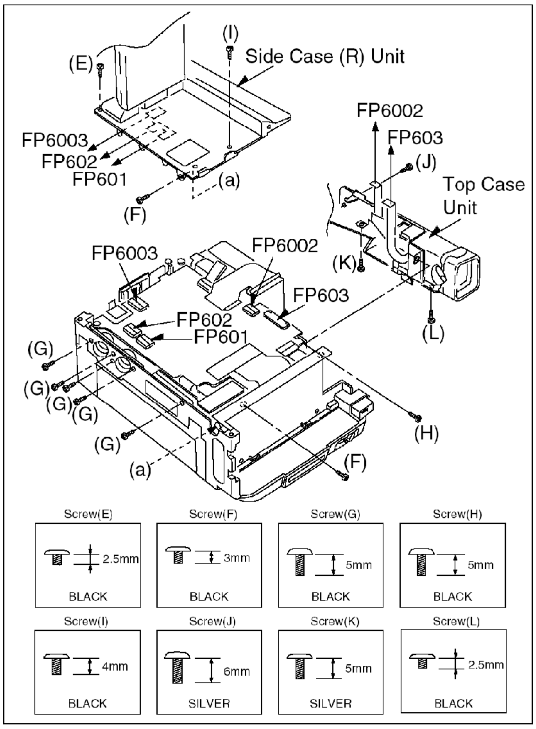

(I)
(E)
Side Case (R) Unit
FP6003
FP602
FP601
(a)
(F)
FP6002
FP603
(J)
Top Case Unit
FP6003
FP6002
(K)
FP603
FP602
FP601
(L)
(G)
(G)
(G)
(G)
(G)
(H)
(a)
(F)
Screw(E) 2.5mm BLACK
Screw(F) 3mm BLACK
Screw(G) 5mm BLACK
Screw(H) 5mm BLACK
Screw(I) 4mm BLACK
Screw(J) 6mm SILVER
Screw(K) 5mm SILVER
Screw(L) 2.5mm BLACK

Fig. 3

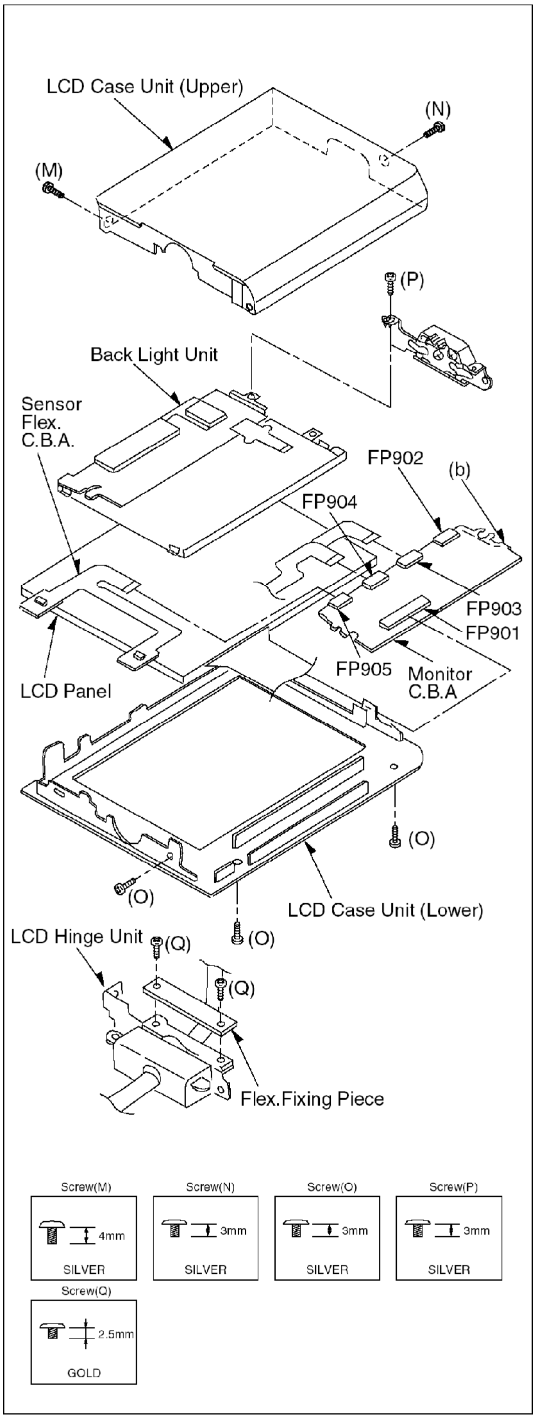

LCD Case Unit (Upper)
(N)
(M)
(P)
Back Light Unit
Sensor Flex. C.B.A.
FP902
(b)
FP904
FP903
FP901
FP905
Monitor C.B.A
LCD Panel
(O)
(O)
LCD Case Unit (Lower)
LCD Hinge Unit
(Q)
(O)
(Q)
Flex.Fixing Piece
Screw(M)
4mm
SILVER
Screw(N)
3mm
SILVER
Screw(O)
3mm
SILVER
Screw(P)
3mm
SILVER
Screw(Q)
2.5mm
GOLD

Fig. 4-1

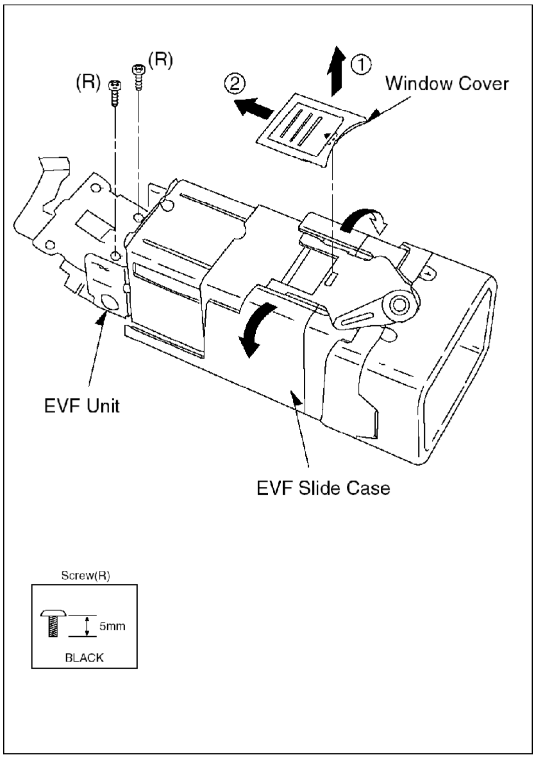

(R)
(R)
②
①
Window Cover
EVF Unit
EVF Slide Case
Screw(R)
5mm
BLACK

Fig. 4-2

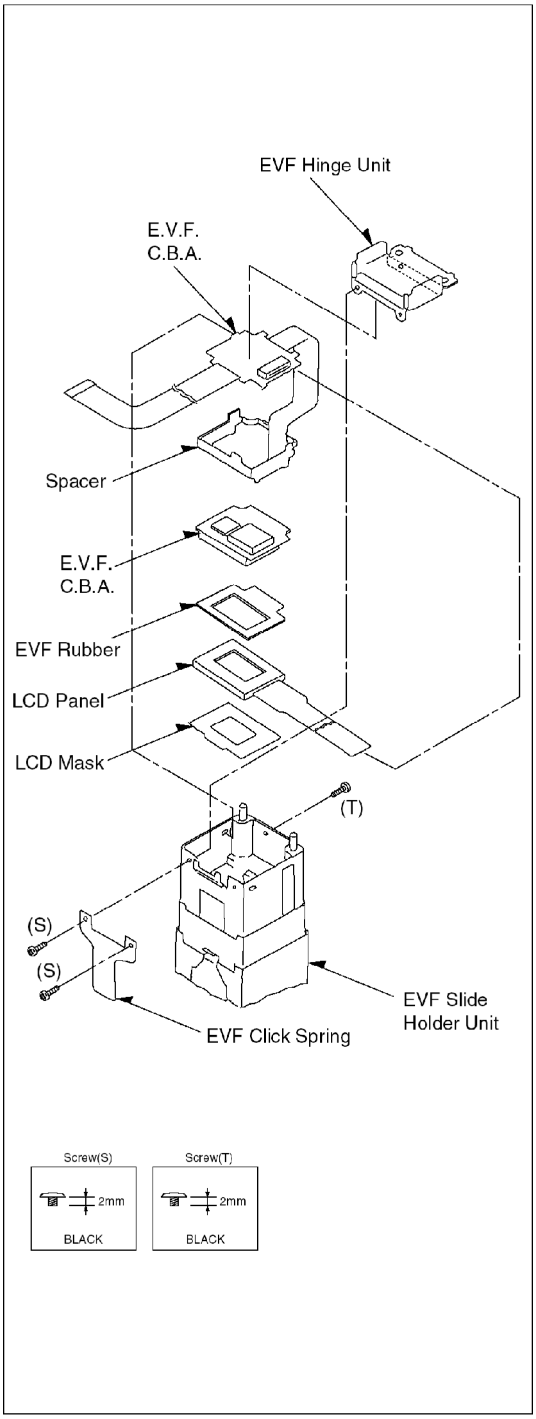

EVF Hinge Unit
E.V.F.
C.B.A.
Spacer
E.V.F.
C.B.A.
EVF Rubber
LCD Panel
LCD Mask
(T)
(S)
(S)
EVF Slide
Holder Unit
EVF Click Spring
Screw(S)
2mm
BLACK
Screw(T)
2mm
BLACK

Fig. 5

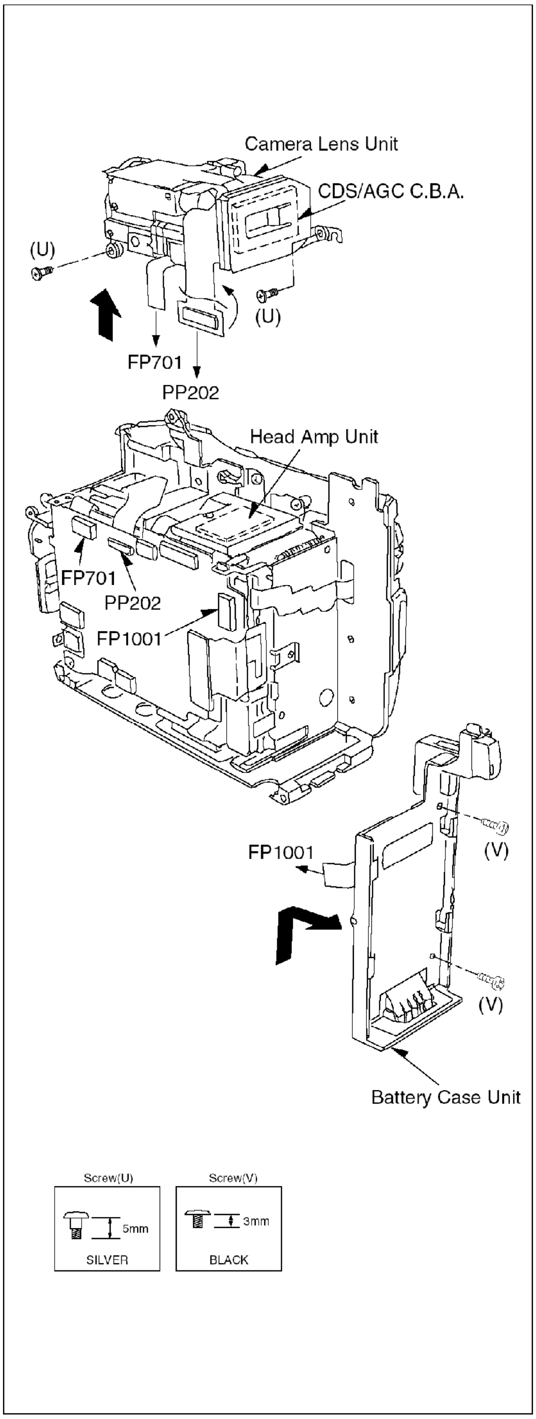

Camera Lens Unit
CDS/AGC C.B.A.
(U)
(U)
FP701
PP202
Head Amp Unit
FP701
PP202
FP1001
FP1001
(V)
(V)
Battery Case Unit
Screw(U)
5mm
SILVER
Screw(V)
3mm
BLACK

Fig. 6-1

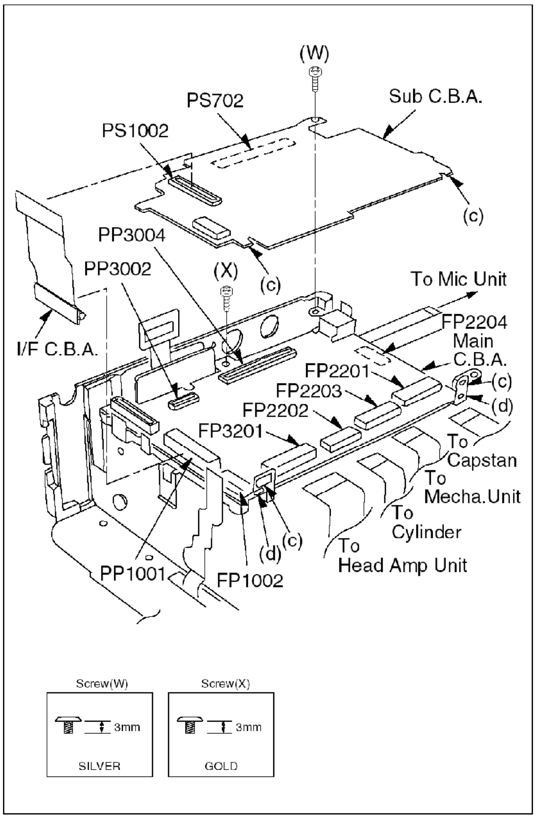

(W)
PS702
Sub C.B.A.
PS1002
(c)
PP3004
PP3002
(X)
(c)
To Mic Unit
FP2204
Main
C.B.A.
I/F C.B.A.
FP2201
FP2203
(c)
FP2202
(d)
FP3201
To
Capstan
To
Mecha.Unit
To
Cylinder
(c)
(d)
To
Head Amp Unit
PP1001
FP1002
Screw(W)
3mm
SILVER
Screw(X)
3mm
GOLD

Fig. 6-2

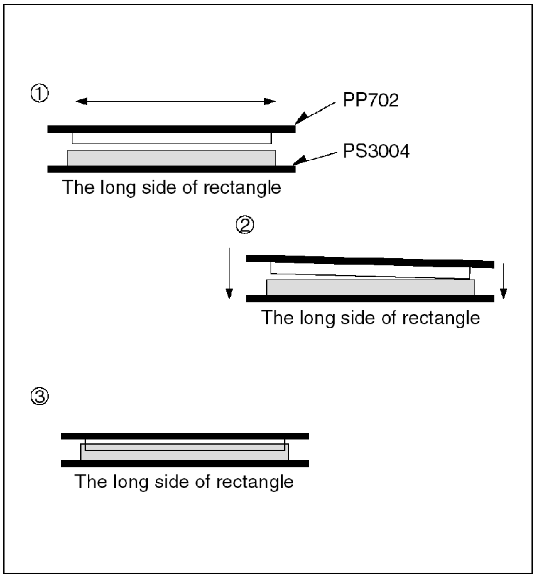

①
PP702
PS3004
The long side of rectangle
②
The long side of rectangle
③
The long side of rectangle

Fig. 7-1

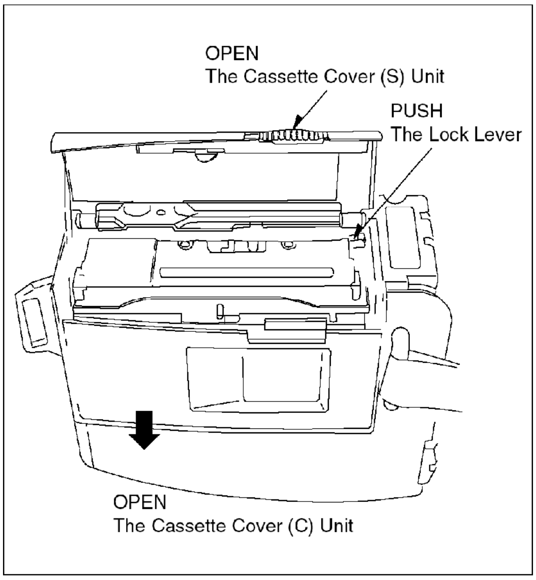
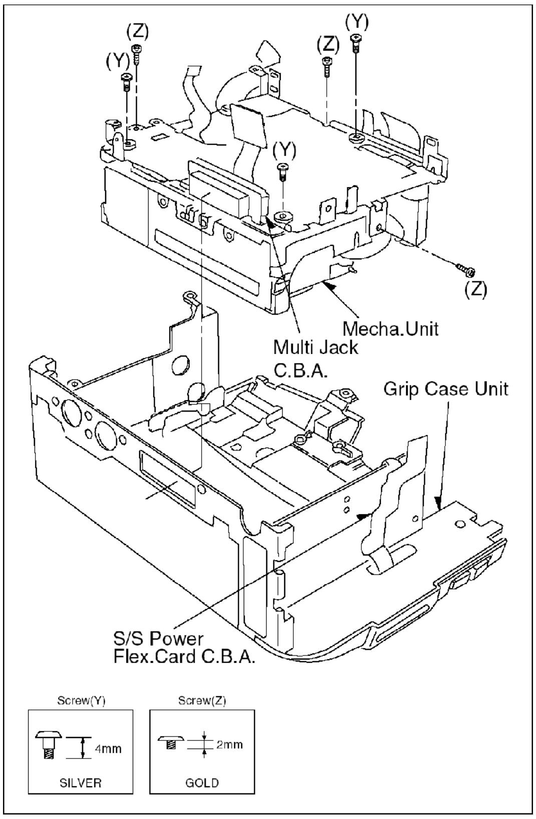

OPEN
The Cassette Cover (S) Unit
PUSH
The Lock Lever
OPEN
The Cassette Cover (C) Unit

Fig. 7-2


(Z)
(Y)
(Z)
(Y)
(Y)
(Z)
Mecha.Unit
Multi Jack
C.B.A.
Grip Case Unit
S/S Power
Flex.Card C.B.A.
Screw(Y)
4mm
SILVER
Screw(Z)
2mm
GOLD

8.3. DISASSEMBLY PROCEDURES OF CAMERA LENS UNIT

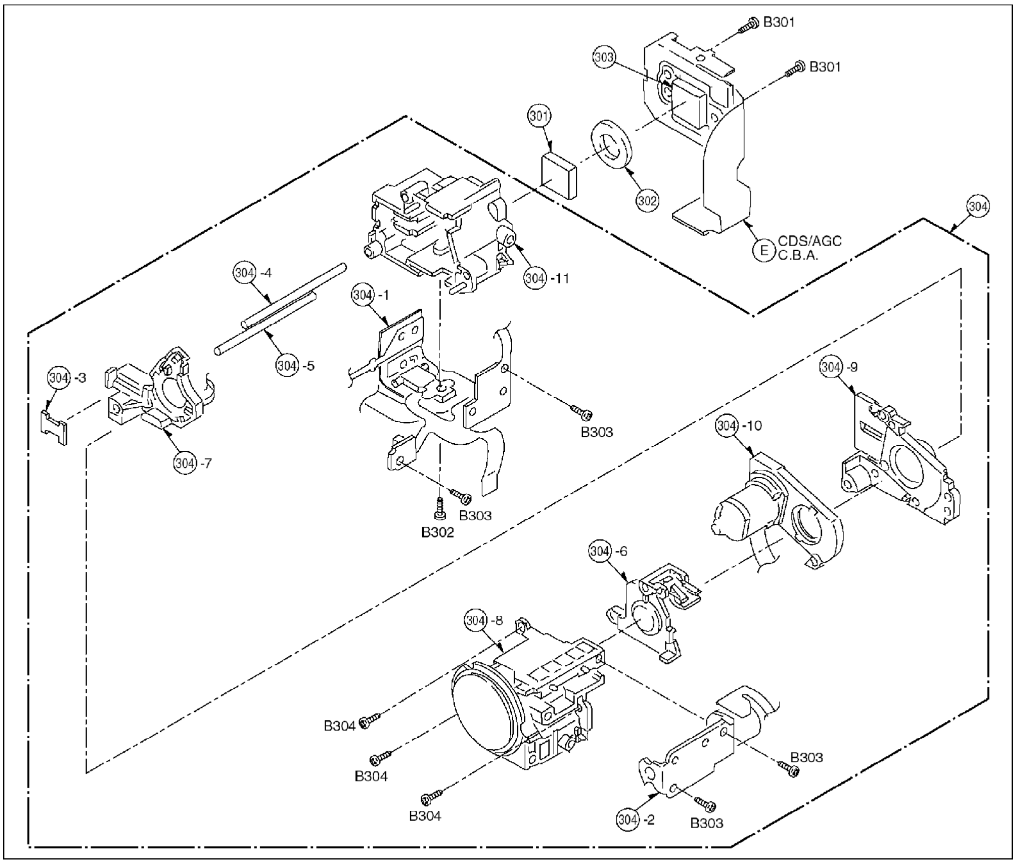
The following flowchart describes order or steps for removing the Camera lens unit and certain printed circuit boards in order to make access to the item needing service. / To reassemble the unit follow the steps in reverse order.

Fig. L1

1. CCD Unit	Ref.No. 303
2. CCD Cushion & Crystal Filter	Ref.No. 302/301
3. Lens Flex. / Zoom Motor U. / Iris U.	Ref.No. 304-1/304-2/304-10
4. Main Frame U.	Ref.No. 304-8
5. 4th Moving Frame U. / Guide Pole	Ref.No. 304-7/304-4/304-5
6. 3rd Moving Frame U.	Ref.No. 304-9
7. 2nd Moning Frame U.	Ref.No. 304-6

Note :
Each Ref.numbers are equivalent to number on Fig. L2 and Parts List.

Fig. L2


B301
303
B301
301
302
304
E CDS/AGC C.B.A.
304 -11
304 -4
304 -1
304 -5
304 -3
304 -7
B303
304 -9
304 -10
B303
B302
304 -6
304 -8
B304
B304
B304
B303
304 -2
B303

9. ABBREVIATIONS

10. WAVEFORM TABLE

11. SCHEMATIC DIAGRAMS

11.1. OVERALL SCHEMATIC DIAGRAM

11.2. INTERCONNECTION SCHEMATIC DIAGRAM

11.3. CDS/AGC SCHEMATIC DIAGRAM

11.4. E.V.F. SCHEMATIC DIAGRAM

11.5. TOP OPERATION FLEX. CARD SCHEMATIC DIAGRAM

11.6. SIDE OPERATION FLEX. UNIT SCHEMATIC DIAGRAM

11.7. MONITOR & SENSOR FLEX. CARD SCHEMATIC DIAGRAM

11.8. MIC UNIT SCHEMATIC DIAGRAM

11.9. S/S POWER FLEX. CARD C.B.A. SCHEMATIC DIAGRAM

11.10. MULTI JACK SCHEMATIC DIAGRAM

11.11. I/F SCHEMATIC DIAGRAM

12. CIRCUIT BOARD ASSEMBLIES

12.1. CDS/AGC C.B.A. (VEP22281A)

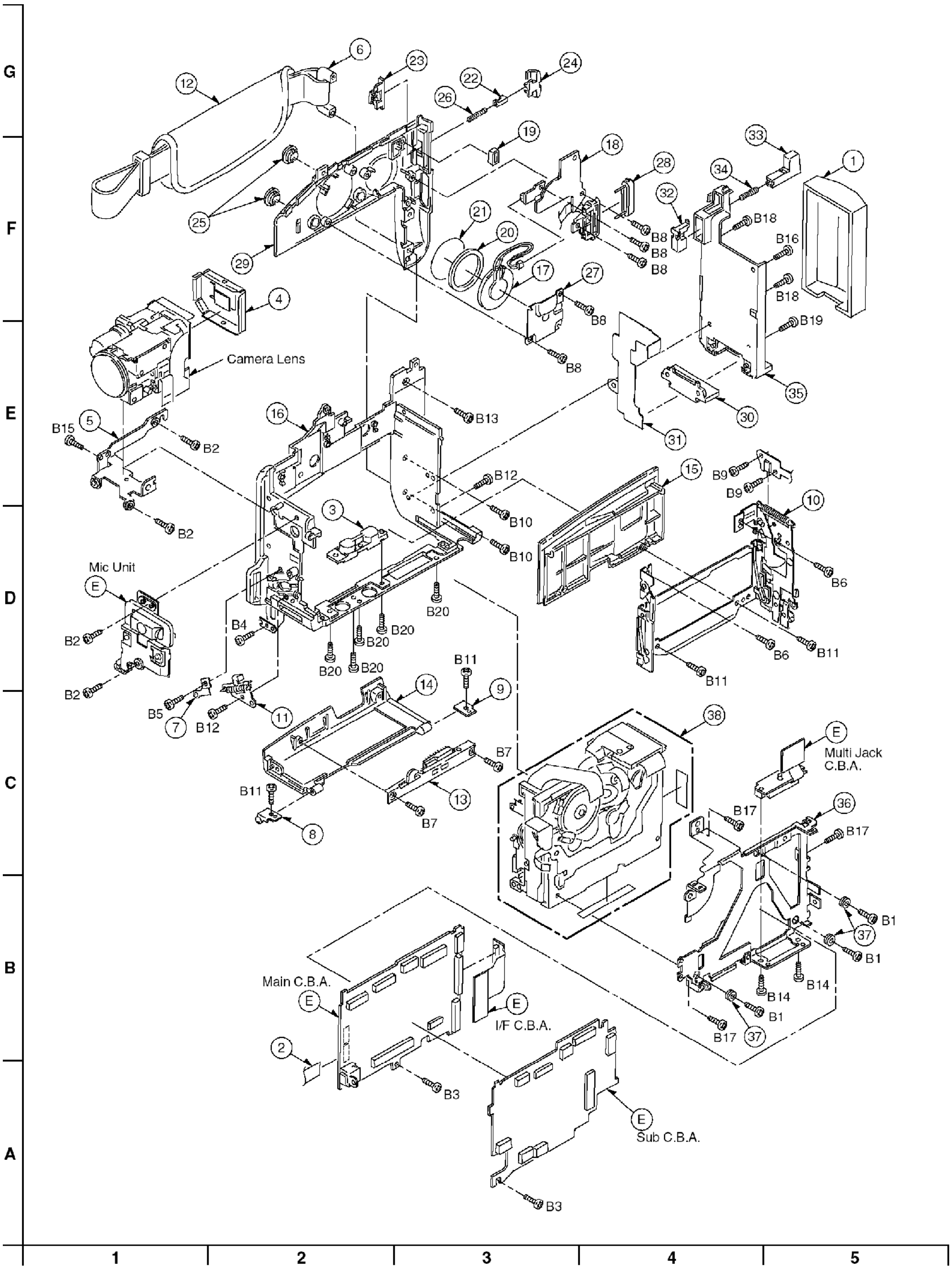
12.2. E.V.F. C.B.A. (VEP28252B)

12.3. MONITOR C.B.A. (VEP26212B)

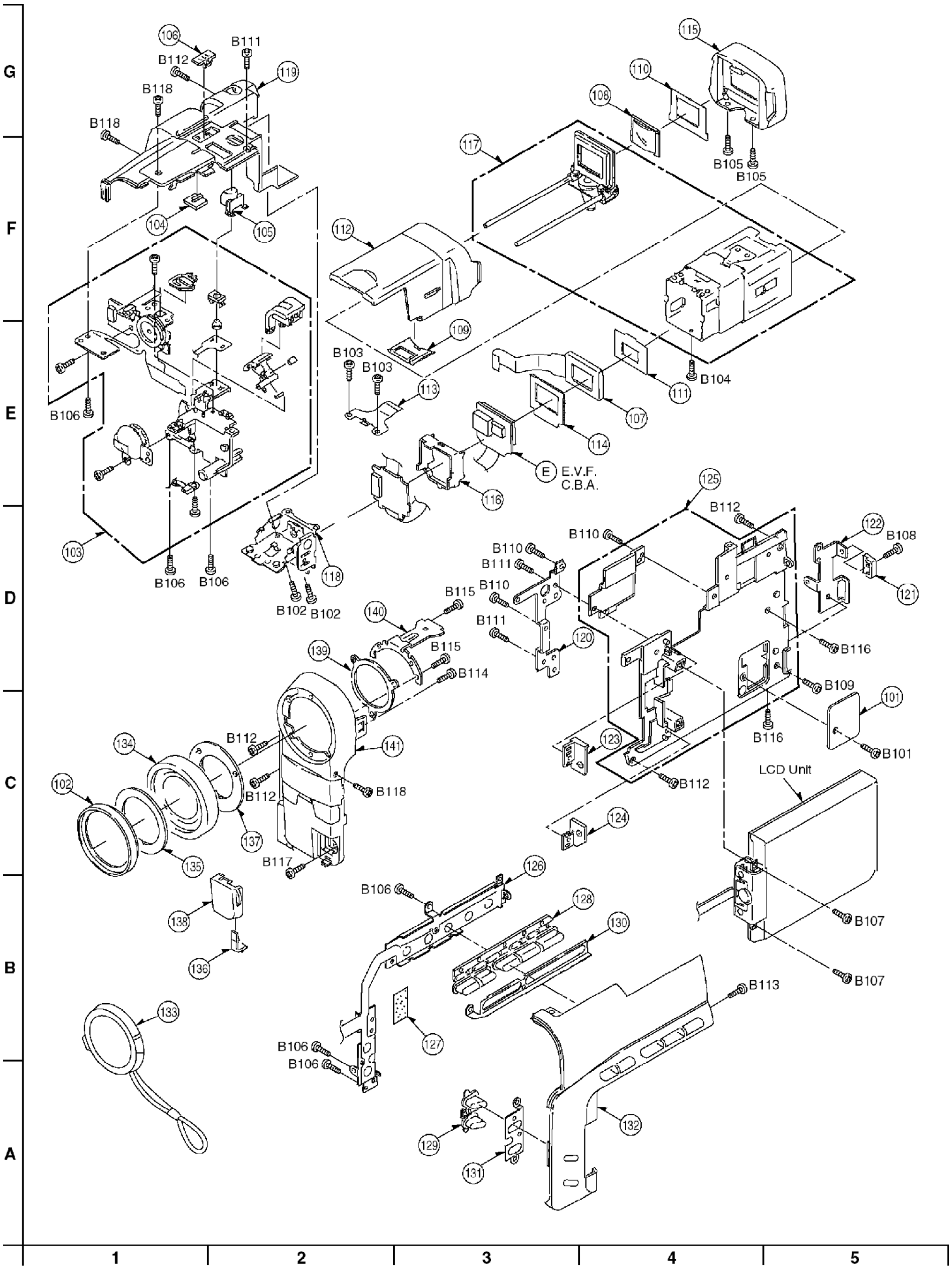
12.4. MIC UNIT C.B.A. (VEK8504)

13. EXPLODED VIEWS

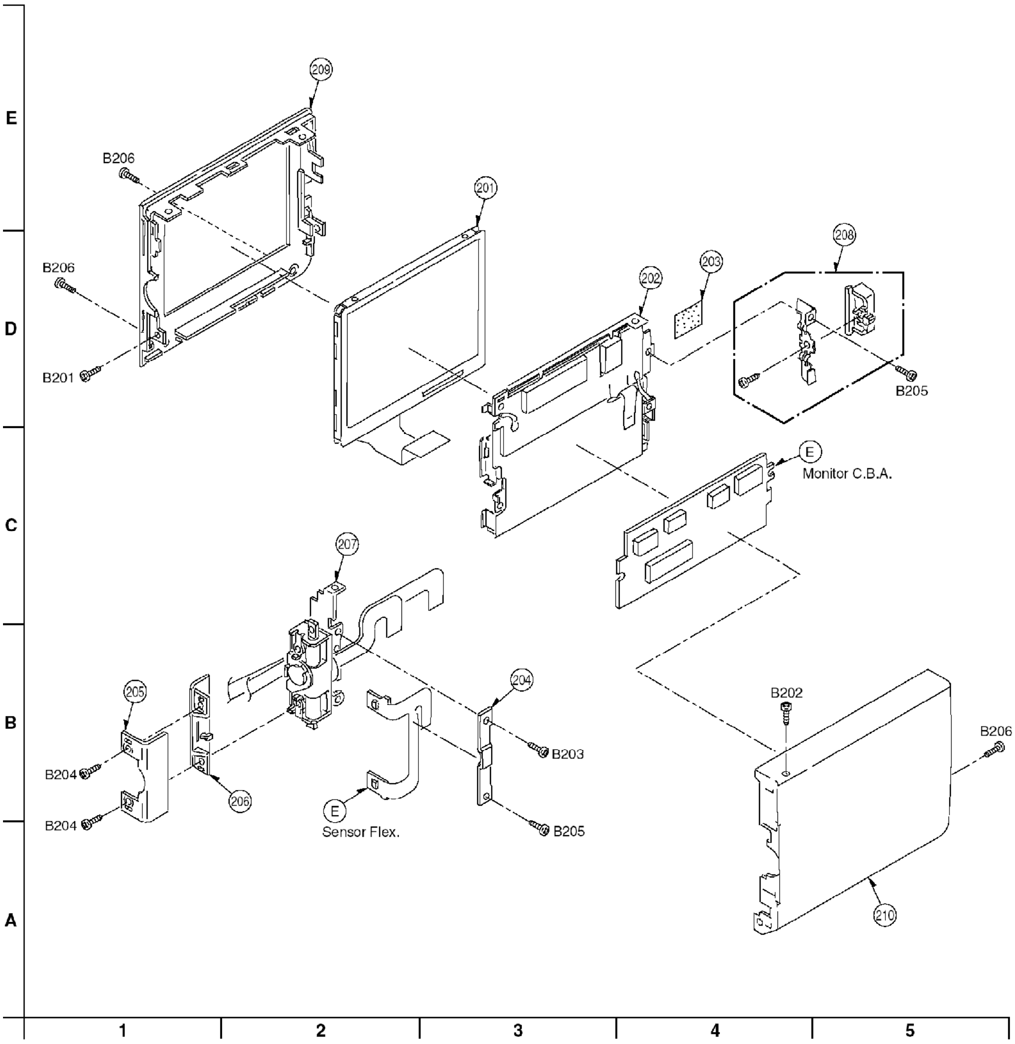
13.1. FRAME & CASING SECTION (1)


G
F
E
D
C
B
A
1
2
3
4
5
6
12
23
22
24
26
19
18
28
33
1
34
25
B18
B16
32
B8
B8
B8
29
21
20
17
27
B18
B19
4
B8
B8
Camera Lens
35
30
31
B15
5
16
B13
B2
B12
15
B9
B9
B10
10
B2
3
B10
Mic Unit
E
B6
B20
B4
B20
B2
B20
B20
B6
B11
B11
B11
B2
14
9
B5
7
B12
11
38
B7
E
Multi Jack
C.B.A.
B11
13
B17
36
B7
8
B17
B1
37
B1
B14
Main C.B.A.
B14
E
E
B1
I/F C.B.A.
B17
37
2
B3
E
Sub C.B.A.
B3

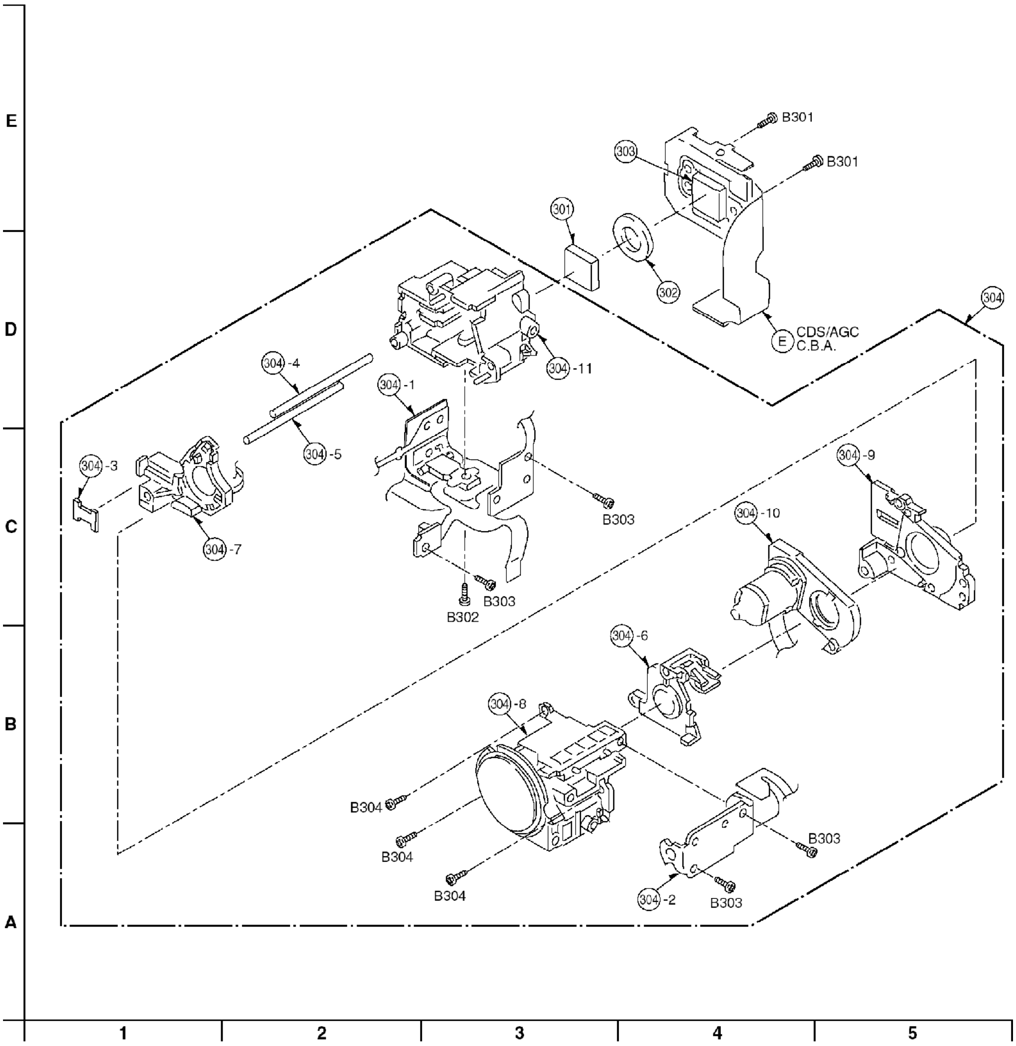
13.2. FRAME & CASING SECTION (2)


G
F
E
D
C
B
A
1
2
3
4
5
106
B111
B112
119
B118
B118
104
105
B106
103
B106
B106
118
B102
B102
112
109
B103
B103
113
117
108
110
115
B105
B105
B104
111
107
114
E E.V.F.
C.B.A.
116
125
B112
B110
122
B108
121
B110
B111
B110
B115
B111
120
140
B115
B114
139
141
B112
B112
B118
B117
134
102
137
135
B116
B109
101
B101
B116
123
B112
LCD Unit
124
126
B106
128
130
138
136
B107
B107
B113
133
127
B106
B106
132
129
131

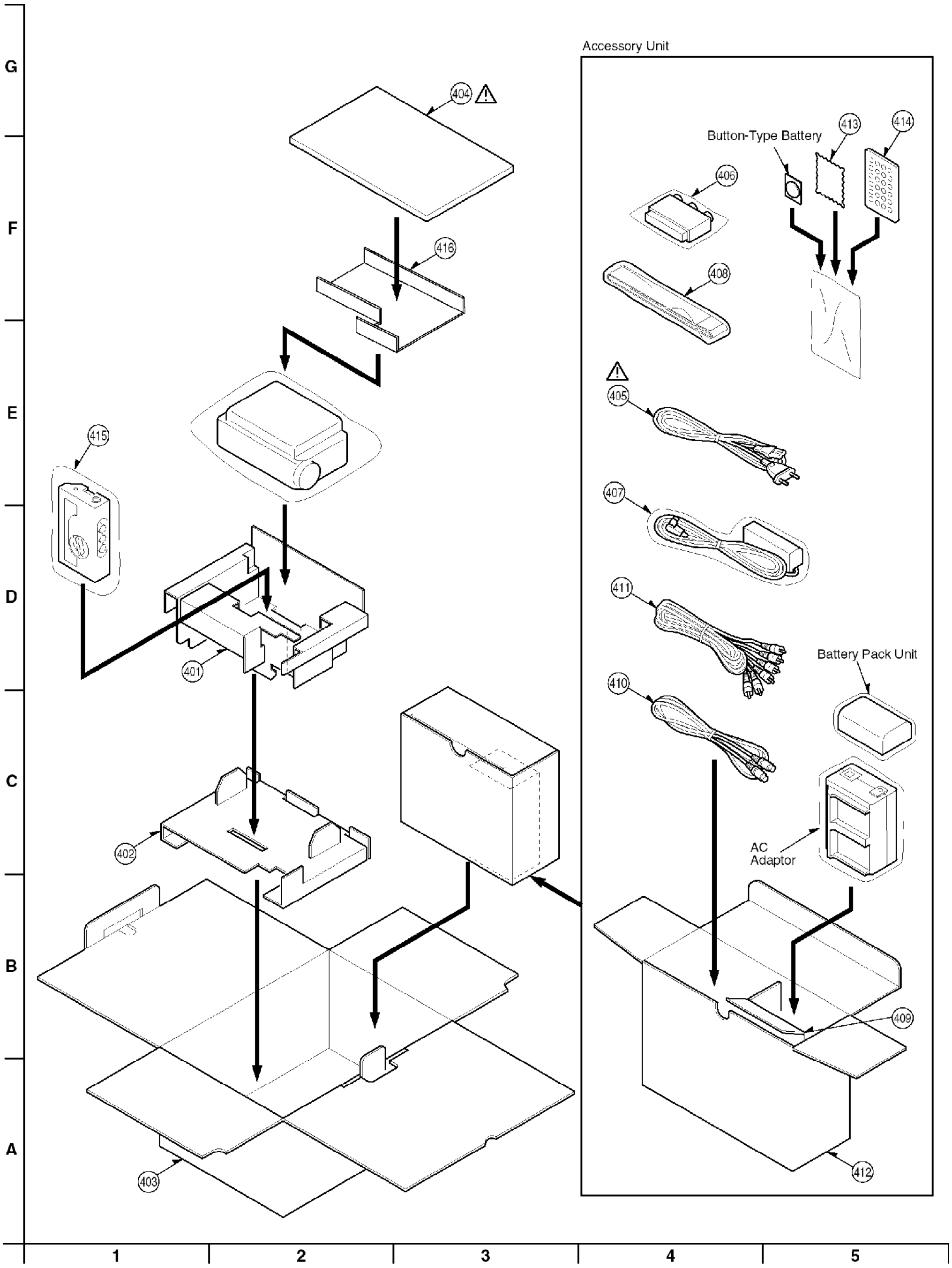
13.3. LCD SECTION


E
D
C
B
A
209
B206
201
B206
B201
208
203
202
B205
E
Monitor C.B.A.
207
205
204
B202
B206
B203
B204
B204
206
E
Sensor Flex.
B205
210
1
2
3
4
5

13.4. CAMERA LENS SECTION


E
D
C
B
A
1
2
3
4
5
B301
303
B301
301
302
304
E CDS/AGC C.B.A.
304-11
304-4
304-1
304-5
304-3
304-7
B303
B303
B302
304-9
304-10
304-6
304-8
B304
B304
B304
B303
304-2
B303

13.5. PACKING PARTS & ACCESSORIES SECTION


G
F
E
D
C
B
A
1
2
3
4
5
404 ⚠
416
415
401
402
403
Accessory Unit
Button-Type Battery
413
414
406
408
⚠
405
407
411
410
Battery Pack Unit
AC Adaptor
409
412

14. REPLACEMENT PARTS LIST

14.1. FRAME & CASING SECTION (1) PARTS LIST

Note: 1. 'Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	1 (1)	VYF2616	BATTERY DUMMY CASE U.	1	
	2 (1)	VJB04700	FRONT FLEX.	1	
	3 (1)	VMD2955	TRIPOD FRAME	1	
	4 (1)	VSC4808	CDS/AGC SHIELD CASE	1	
	5 (1)	VXA6224	LENS FRAME U.	1	
	6 (1)	VGQ5100	GRIP BELT PIECE	1	
	7 (1)	VML3351	EJECT FIXING ANGLE	1	
	8 (1)	VXA6129	DOOR ANGLE (F) U.	1	
	9 (1)	VXA6130	DOOR ANGLE (R) U.	1	
	10 (1)	VXA6216	OUT HOLDER U.	1	
	11 (1)	VXL2807	EJECT U.	1	
	12 (1)	VYC0803	GRIP BELT U.	1	
	13 (1)	VXU1494	COVER LOCK U.	1	
	14 (1)	VYK8569	CASSETTE COVER (S)(1) U.	1	
	15 (1)	VYK8570	CASSETTE COVER (C) U.	1	
	16 (1)	VYK8661	GRIP CASE (1) U.	1	
	17 (1)	VEK8361	SPEAKER U.	1	
	18 (1)	VEK8510	S/S POWER FLEX. U.	1	
	19 (1)	VQL0788	POWER PANEL LIGHT	1	
	20 (1)	VGQ5049	SPEAKER SOUNDPROOFING	1	
	20 (1)	----------	SHEET		
	21 (1)	VGQ5102	SPEAKER NET	1	
	22 (1)	VGU7748	POWER LOCK BUTTON	1	
	23 (1)	VGU7749	POWER LOCK PIECE	1	
	24 (1)	VGU8012	POWER KNOB	1	
	25 (1)	VKF2971	MECHA. ADJ. PIECE	2	
	26 (1)	VMB3201	POWER LOCK SPRING	1	
	27 (1)	VMP5782	SPEAKER FIXING ANGLE	1	
	28 (1)	VYK8666	S/S BUTTON U.	1	
	29 (1)	VYK8983	GRIP PIECE (1) U.	1	
	30 (1)	VEK8300	BATTERY CATCHER	1	
	31 (1)	VWJ1259	BATTERY CATCHER FLEX.	1	
	32 (1)	VGQ4790	BATTERY LOCK PIECE	1	
	33 (1)	VGU8172	BATTERY LOCK BUTTON	1	
	34 (1)	VMB3210	BATTERY LOCK SPRING	1	
	35 (1)	VYK8995	BATTERY CASE (1) U.	1	
	36 (1)	VYQ1674	MECHA. FRAME (1) U.	1	
	37 (1)	VMG1107	MECHA. DUMPER RUBBER	3	
	38 (1)	VYK1428-K	MECHA. UNIT	1	
	B1 (1)	VHD1133	SCREW	3	
	B2 (1)	VHD1210	SCREW	4	
	B3 (1)	VHD1226	SCREW	2	
	B4 (1)	VHD1181	SCREW	1	
	B5 (1)	VHD1200	SCREW	1	
	B6 (1)	VHD1201	SCREW	2	
	B7 (1)	XQN14+B2FN	SCREW	2	
	B8 (1)	XQN2+BJ3	SCREW	5	
	B9 (1)	XQN14+B14FN	SCREW	2	
	B10 (1)	XQN16+BJ6FZ	SCREW	2	
	B11 (1)	XQN16+B2FN	SCREW	4	
	B12 (1)	XQN16+B3FN	SCREW	2	
	B13 (1)	XQN2+BJ4FZ	SCREW	1	
	B14 (1)	XQN16+BJ4FN	SCREW	2	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	B15 (1)	XQN16+BJ3FZ	SCREW	1	
	B16 (1)	XQN16+BJ6FZ	SCREW	1	
	B17 (1)	XQN16+B2FN	SCREW	3	
	B18 (1)	XQN16+B35FZ	SCREW	2	
	B19 (1)	XQN16+B4FZ	SCREW	1	
	B20 (1)	XQN16+B5FZ	SCREW	5	

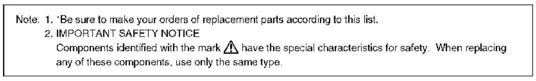
14.2. FRAME & CASING SECTION (2) PARTS LIST

Note: 1. ˙Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	101 (2)	VKF2950	EVF COVER	1	
	102 (2)	VYF2526	MC PROTECTOR U.	1	
	103 (2)	VEK8705	TOP OPERATION U.	1	
	104 (2)	VGL0808	FULLAUTO PANEL LIGHT	1	
	105 (2)	VGU7898	PHOTO SHOT BUTTON	1	
	106 (2)	VGU7975	FULLAUTO KNOB	1	
	107 (2)	F05KM100	LCD PANEL	1	
	108 (2)	VDL0737	EVF LENS	1	
	109 (2)	VGQ4809	WINDOW COVER	1	
	110 (2)	VGQ4982	EVF LENS SHEET	1	
	111 (2)	VGQ5056	LCD MASK	1	
	112 (2)	VGQ5328	EVF SLIDE CASE	1	
	113 (2)	VMC1389	EVF CLICK SPRING	1	
	114 (2)	VMG1105	EVF RUBBER	1	
	115 (2)	VMG1156	EYE CAP	1	
	116 (2)	VMX2717	SPACER	1	
	117 (2)	VXA6172	EVF SLIDE HOLDER U.	1	
	118 (2)	VXA6218	EVF HINGE U.	1	
	119 (2)	VYK8972	TOP CASE (1) U.	1	
	120 (2)	VMP5790	HINGE FIXING ANGLE	1	
	121 (2)	VGQ5029	LCD LOCK COVER	1	
	122 (2)	VMP5788	SHOULDER BELT ANGLE	1	
	123 (2)	VXU1529	MAGNET FIXING PIECE	1	
			(UPPER)		
	124 (2)	VXU1530	MAGNET FIXING PIECE	1	
			(LOWER)		
	125 (2)	VYK8657	SIDE (R) BASE (1) U.	1	
	126 (2)	VEK8509	SIDE OPERATION FLEX. U.	1	
	127 (2)	VGQ5181	PROTECT SHEET	1	
	128 (2)	VGU7966	VTR OPERATION BUTTON	1	
	129 (2)	VGU7967	MULTI OPERATION BUTTON	1	
	130 (2)	VMC1473	VTR EARTH PLATE	1	
	131 (2)	VMC1474	MULTI EARTH PLATE	1	
	132 (2)	VYK8979	SIDE (R) COVER (1) U.	1	
	133 (2)	VYP7359	HOOD CAP U.	1	
	134 (2)	VDW0571	LENS HOOD	1	
	135 (2)	VGH4180	LENS HOOD PLATE	1	
	136 (2)	VGQ4820	DV COVER HINGE	1	
	137 (2)	VGQ4931	HOOD PIECE	1	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	138 (2)	VKF2953	DV COVER	1	
	139 (2)	VMG1131	LENS O RING	1	
	140 (2)	VMP5785	FRONT ANGLE	1	
	141 (2)	VYK8994	FRONT CASE (1) U.	1	
	B101 (2)	XQN16+BJ35FZ	SCREW	1	
	B102 (2)	VHD1157	SCREW	2	
	B103 (2)	VHD1196	SCREW	2	
	B104 (2)	VHD1205	SCREW	1	
	B105 (2)	XQN16+B2FZ	SCREW	2	
	B106 (2)	XQN16+BJ4	SCREW	6	
	B107 (2)	VHD1232	SCREW	2	
	B108 (2)	VHD1220	SCREW	1	
	B109 (2)	XQN16+B16FZ	SCREW	1	
	B110 (2)	XQN16+BJ5	SCREW	3	
	B111 (2)	XQN16+BJ6FN	SCREW	3	
	B112 (2)	XQN16+B3FZ	SCREW	5	
	B113 (2)	XQN16+B4FN	SCREW	1	
	B114 (2)	VHD1227	SCREW	1	
	B115 (2)	XQN16+A5	SCREW	2	
	B116 (2)	XQN16+BJ4FZ	SCREW	2	
	B117 (2)	XQN16+B3FN	SCREW	1	
	B118 (2)	XQN16+B5FN	SCREW	5	

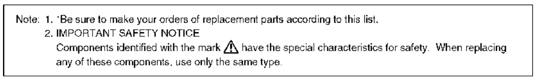
14.3. LCD SECTION PARTS LIST



Note: 1. ˙Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	201 (3)	DCX501BK7	LCD PANEL	1	
⚠	202 (3)	VEK8516	BACK LIGHT U.	1	
	203 (3)	VGQ2759	PROTECT SHEET	1	
	204 (3)	VGQ5046	FLEX. FIXING PIECE	1	
	205 (3)	VGQ5047	HINGE COVER (UPPER)	1	
	206 (3)	VGQ5089	HINGE COVER (LOWER)	1	
	207 (3)	VXD0290	LCD HINGE (1) U.	1	
	208 (3)	VYK8653	LCD LOCK U.	1	
	209 (3)	VYK8654	LCD CASE U.(LOWER)	1	
	210 (3)	VKM5211	LCD CASE U.(UPPER)	1	
	B201 (3)	VHD1209	SCREW	1	
	B202 (3)	VHD1267	SCREW	1	
	B203 (3)	XQN16+B25	SCREW	1	
	B204 (3)	XQS16+A25FN	SCREW	2	
	B205 (3)	XQN16+B3FN	SCREW	2	
	B206 (3)	XQS16+A3FN	SCREW	3	

14.4. CAMERA LENS SECTION PARTS LIST



Note: 1. ˙Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

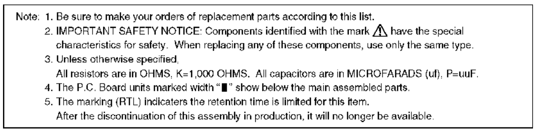
	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	301 (4)	VDL0916	CRYSTAL FILTER	1	
	303 (4)	VMX2758	CCD CUSHION	1	
	302 (4)	VEK8710	CCD U.	1	
	304 (4)	VXW0403	LENS U.	1	
	304-1 (4)	VEK8456	LENS FLEX.	1	
	304-2 (4)	VEM0653	ZOOM MOTOR U.	1	
	304-3 (4)	VMA9961	SIDE YOKE	1	
	304-4 (4)	VMS6418	GUIDE POLE	1	
	304-5 (4)	VMS6487	GUIDE POLE (A)	1	
	304-6 (4)	VXP1886	2ND MOVING FRAME U.	1	
	304-7 (4)	VXP1887	4TH MOVING FRAME U.	1	
	304-8 (4)	VXQ0730	MAIN FRAME U.	1	
	304-9 (4)	VXQ0731	3RD MOVING FRAME U.	1	
	304-10(4)	VXL2834	IRIS U.	1	
	304-11(4)	VXQ0752	MASTER FLANGE U.	1	
	B301 (4)	XQN16+CJ4FY	SCREW	2	
	B302 (4)	XQN16+BJ4FY	SCREW	1	
	B303 (4)	XQN16+BJ5	SCREW	4	
	B304 (4)	XQN16+BJ8	SCREW	3	

14.5. PACKING PARTS & ACCESSORIES SECTION PARTS LIST

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	401 (5)	VPN5181	CUSHION (UPPER)	1	
	402 (5)	VPN5182	CUSHION (LOWER)	1	
	403 (5)	VPK2232	PACKING	1	NV-DS33EG
	403 (5)	VPK2233	PACKING	1	NV-DS33B
⚠	404 (5)	VQT8051	OPERATING INSTRUCTIONS	1	NV-DS33EG
			(GERMAN ITALIAN ENGLISH		
			FRENCH)		
⚠	404 (5)	VQT8052	OPERATING INSTRUCTIONS	1	NV-DS33EG
			(SPANISH DUTCH SWEDISH		
			DANISH)		
⚠	404 (5)	VQT8053	OPERATING INSTRUCTIONS	1	NV-DS33B
			(ENGLISH)		
⚠	405 (5)	VJA0664	AC MAINS CABLE	1	NV-DS33EG
⚠	405 (5)	VJA0940	AC MAINS CABLE	1	NV-DS33B
	406 (5)	VFA0151	21-PIN ADAPTOR	1	
	407 (5)	VEK8328	DC INPUT CABLE	1	
	408 (5)	VFC2905	SHOULDER BELT	1	
	409 (5)	VPN4949	PAD	1	
	410 (5)	VJA0658	S-VIDEO CABLE	1	
	411 (5)	VJA1028	AV CABLE	1	
	412 (5)	VPN4948	ACCESSORIES PACKING	1	
	413 (5)	VFK1792	CLEANING TISSUE	1	
	414 (5)	VEQ2141	REMOTE CONTROLLER	1	
	415 (5)	VSK0553	OUTPUT TERMINAL BOX	1	
	416 (5)	VPN5183	PAD	1	
			******JIG & TOOLS******		
		VFK1442	FLAT CABLE 21P	1	
		VFK1453	FLAT CABLE 40P	1	
		VFK1452	FLAT CABLE 21P	3	
		VFK1440	FLAT CABLE 10P	1	
		VFK1443	FLAT CABLE 18P	1	
		VFA0272	232C (M3) I/F CABLE	1	
		VFK1308E	MEASURING BOARD	1	
		VFK1309EX	CONNECTION ADAPTOR	1	
		VFK1309	EVR CONNECTION BOARD	1	
		VFK1317	FLAT CABLE 30P	2	
		VJA0941	DC OUTPUT CABLE	1	FOR AC ADAPTOR
		VFK1164TAR3A	SETUP RING	1	FOR COLLIMATOR
		VFM3110EDS	ALIGNMENT TAPE	1	

14.6. ELECTRICAL PARTS LIST


Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "▮" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

	Ref. No.	**Part No.**	**Part Name & Description**	**Pcs**	**Remarks**
	■	VEP03E68C	MAIN C.B.A.	1	(RTL)
	■	VEP23472C	SUB C.B.A.	1	(RTL)
	■	VEP26212B	MONITOR C.B.A.	1	(RTL)
	■	VEK8504	MIC UNIT	1	
	■	VEP28252B	E.V.F. C.B.A.	1	(RTL)
	■	VEP22281A	CDS/AGC C.B.A.	1	(RTL)
	■	VEP06C74A	S/S POWER FLEX.CARD C.B.A	1	(RTL)
	■	VEP00Z71A	TOP OPERATION FLEX.CARD	1	(RTL)
	■	VEK8509	SIDE OPERATION FLEX.U.	1	
	■	VEP06C60A	SENSOR FLEX. CARD	1	(RTL)
	■	VEK8456	LENS FLEX.	1	
	■	VEP00Z81A	I/F C.B.A.	1	(RTL)
	■	VEP00Z68A	MULTI JACK C.B.A.	1	(RTL)
	■	VEP26212B	MONITOR C.B.A.	1	(RTL)
	C901	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
	C902	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
	C903	ECST1AY106Z	T.CAPACITOR CH 10V 10U	1	
	C904	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
	C905	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
	C906	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
	C909	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C911	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
	C912	ECST1VX225Z	T.CAPACITOR CH 35V 2.2U	1	
	C922	ECST0JY156Z	T.CAPACITOR CH 6.3V 15U	1	
	C923	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C924	ECUX1H270JCQ	C.CAPACITOR CH 50V 27P	1	
	C925	ECUX1H221JCQ	C.CAPACITOR CH 50V 220P	1	
	C926	ECUX1H100CCQ	C.CAPACITOR CH 50V 10P	1	
	C927	ECUX1E332KBQ	C.CAPACITOR CH 25V 3300P	1	
	C928	ECST0JY335Z	T.CAPACITOR CH 6.3V 3.3U	1	
	C929	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
	C933	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
	C934	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C935	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
	C938	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
	D901	MA338	DIODE	1	
	FP901	VJS4019B024	CONNECTOR (FEMALE) 24P	1	
	FP902	VJS3319B008	CONNECTOR (FEMALE) 8P	1	
	FP903	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
	FP904	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
	FP905	VJS3319B006	CONNECTOR (FEMALE) 6P	1	
	IC902	CXD2411AR	IC	1	
	IC903	NJM2904V	IC	1	
	IC904	LZ9GB244	IC	1	
	IC905	TC4W66FU	IC	1	

	[illegible]	[illegible]	[illegible]	[illegible]	

	Ref. No.	**Part No.**	**Part Name & Description**	**Pcs**	**Remarks**
	IC906	**TC7ST04FU**	**IC**	**1**	
	IC907	**TC7S14FU**	**IC**	**1**	
	IC908	**TC7ST08FU**	**IC**	**1**	
	IC909	**NJM78L12UA**	**IC**	**1**	
	L901	**VLQ0807K100**	**COIL 10UH**	**1**	
	L902	**VLQ0426J4R7**	**COIL 4.7UH**	**1**	
	L903	**VLQ0807K100**	**COIL 10UH**	**1**	
	L904	**VLQ0319M3R3**	**COIL 3.3UH**	**1**	
	L905	**VLQ0807K100**	**COIL 10UH**	**1**	
	L907	**VLQ0807K100**	**COIL 10UH**	**1**	
	L908	**VLQ0807K100**	**COIL 10UH**	**1**	
	Q901	**XP4601**	**TRANSISTOR-TRANSISTOR**	**1**	
	Q903	**XP1501**	**TRANSISTOR-TRANSISTOR**	**1**	
	Q904	**XP4601**	**TRANSISTOR-TRANSISTOR**	**1**	
	Q906	**XP1501**	**TRANSISTOR-TRANSISTOR**	**1**	
	QR901	**XP4312**	**TRANSISTOR-RESISTOR**	**1**	
	QR906	**XP4213**	**TRANSISTOR-RESISTOR**	**1**	
	R901	**ERJ2RHD153**	**M.RESISTOR CH 1/16W 15K**	**1**	
	R902	**ERJ2RHD563**	**M.RESISTOR CH 1/16W 56K**	**1**	
	R903	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R905	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R907	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R908	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R909	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R910	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R911	**ERJ2RHD153**	**M.RESISTOR CH 1/16W 15K**	**1**	
	R912	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R913	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R914	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R921	**ERJ2GE0R00**	**M.RESISTOR CH 1/16W 0**	**1**	
	R922	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R924	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R925	**ERJ2GEJ103**	**M.RESISTOR CH 1/16W 10K**	**1**	
	R926	**ERJ2GEJ103**	**M.RESISTOR CH 1/16W 10K**	**1**	
	R927	**ERJ2GEJ103**	**M.RESISTOR CH 1/16W 10K**	**1**	
	R928	**ERJ2GEJ473**	**M.RESISTOR CH 1/16W 47K**	**1**	
	R929	**ERJ2GEJ332**	**M.RESISTOR CH 1/16W 3.3K**	**1**	
	R930	**ERJ2GEJ332**	**M.RESISTOR CH 1/16W 3.3K**	**1**	
	R931	**ERJ2RHD333**	**M.RESISTOR CH 1/16W 93K**	**1**	
	R932	**ERJ2RHD473**	**M.RESISTOR CH 1/16W 47K**	**1**	
	R933	**ERJ2RHD333**	**M.RESISTOR CH 1/16W 93K**	**1**	
	R934	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R935	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R944	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R945	**ERJ2GEJ333**	**M.RESISTOR CH 1/16W 33K**	**1**	
	R953	**ERJ2GEJ102**	**M.RESISTOR CH 1/16W 1K**	**1**	
	R954	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R955	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R956	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R957	**ERJ2GEJ472**	**M.RESISTOR CH 1/16W 4.7K**	**1**	
	R958	**ERJ2GE0R00**	**M.RESISTOR CH 1/16W 0**	**1**	
	R959	**ERJ2GE0R00**	**M.RESISTOR CH 1/16W 0**	**1**	

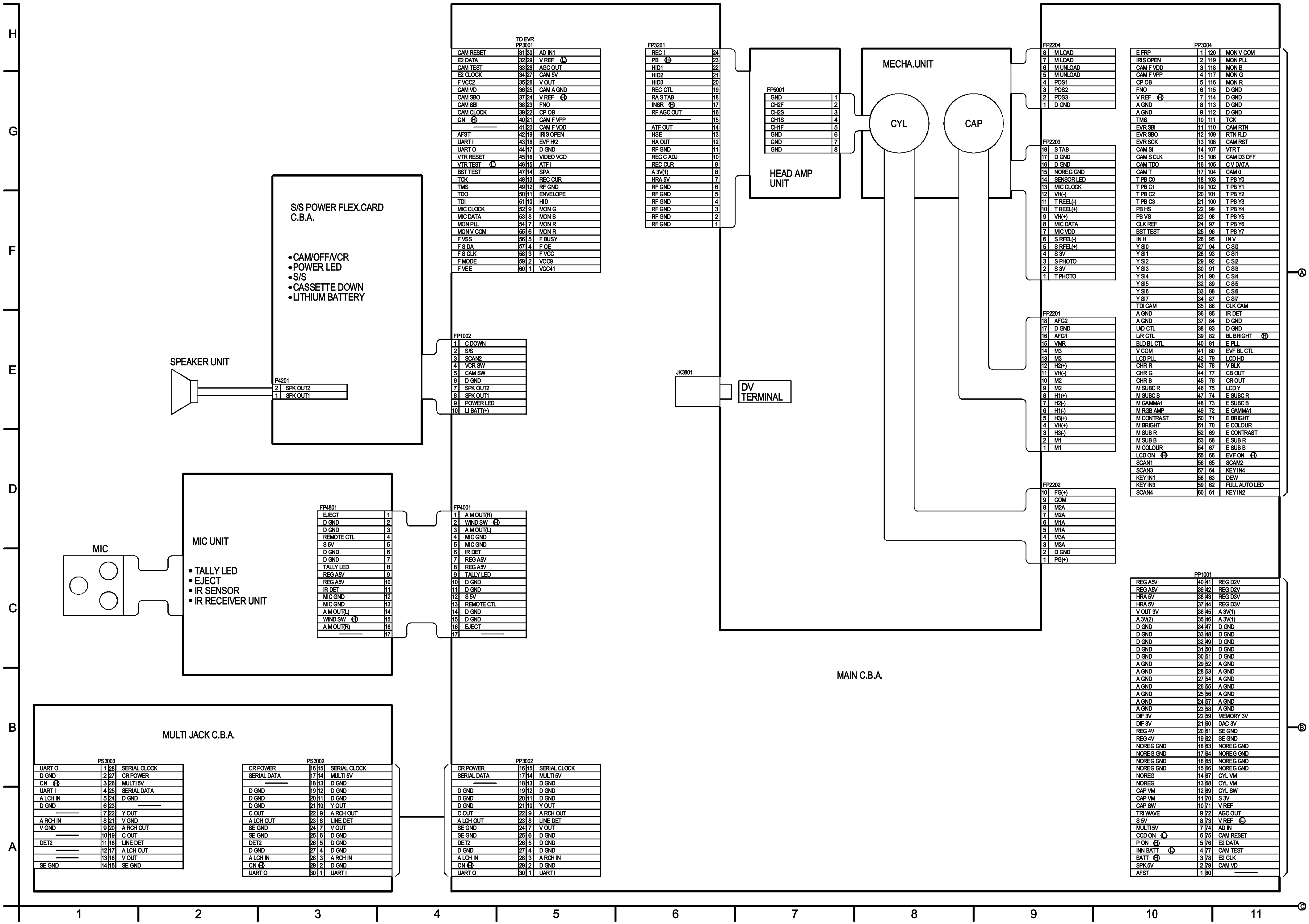
	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	■	VEK8504	MIC UNIT	1	
	C451	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
	C452	ECUX0J474KBV	C.CAPACITOR CH 6.3V 0.47U	1	
	C454	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
	C4801	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
	C4802	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	1	
	C4804	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
	C4805	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
	C4806	ECUX1C333KBQ	C.CAPACITOR CH 16V 0.033U	1	
	C4807	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	1	
	C4808	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
	C4809	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
	C4814	ECUX1E682KBQ	C.CAPACITOR CH 25V 6800P	1	
	C4816	ECUX1E682KBQ	C.CAPACITOR CH 25V 6800P	1	
	C4817	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
	C4830	ECST0JY226Z	T.CAPACITOR CH 6.3V 22U	1	
	C4903	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C4908	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C4914	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C4916	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C6401	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C6402	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
	D451	DAP222	DIODE	1	
	D6801	CL150UR	LED	1	
	D6802	PH310	DIODE	1	
	FP4801	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
	IC457	TA75S393F	IC	1	
	IC4801	NJM2112V	IC	1	
	IR6401	VEK8283	IR RECEIVER UNIT	1	
	L451	VLQ0807K100	COIL 10UH	1	
	L6401	VLQ0807K220	COIL 22UH	1	
	Q451	2SD1030	TRANSISTOR	1	
	Q4805	2SC4617	TRANSISTOR	1	
	Q4810	2SC4617	TRANSISTOR	1	
	Q4811	2SC4617	TRANSISTOR	1	
	Q4902	2SC4617	TRANSISTOR	1	
	Q4904	2SC4617	TRANSISTOR	1	
	QR4903	DTC124EE	TRANSISTOR-RESISTOR	1	
	QR4904	DTC124EE	TRANSISTOR-RESISTOR	1	
	R451	ERJ3GEYJ225	M.RESISTOR CH 1/16W 2.2K	1	
	R452	ERJ2GEJ334	M.RESISTOR CH 1/16W 330K	1	
	R453	ERJ2RHD113	M.RESISTOR CH 1/16W 11K	1	
	R454	ERJ2RHD183	M.RESISTOR CH 1/16W 18K	1	
	R455	ERJ3GEYJ106	M.RESISTOR CH 1/16W 10M	1	
	R4801	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
	R4802	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
	R4803	ERJ6GEYJ392	M.RESISTOR CH 1/10W 3.9K	1	
	R4805	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4806	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
	R4807	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4808	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
	R4809	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	R4810	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4811	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4812	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4814	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
	R4815	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4816	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4818	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
	R4823	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
	R4824	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
	R4839	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4861	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4864	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4906	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
	R4908	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
	R4910	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4913	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
	R4915	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
	R4917	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4924	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4928	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R4934	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
	R4938	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
	R6803	ERJ6GEYJ181	M.RESISTOR CH 1/10W 180	1	
	S6901	VSP0584	SWITCH	1	
	■	VEP28252B	E.V.F. C.B.A.	1	(RTL)
	BL881	VLL0203	FLUORESCENT LAMP	1	
	C801	ECUM1A335KBP	C.CAPACITOR CH 10V 3.3U	1	
	C802	ECGC1BB150	E.CAPACITOR CH 12.5V 15U	1	
	C827	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
	C829	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C830	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
	C832	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
	C833	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
	C834	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C835	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C836	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C837	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C838	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
	C839	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
	C865	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C866	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	D801	MA338	DIODE	1	
	D803	1SS355	DIODE	1	
	FP802	VJS3319B016	CONNECTOR (FEMALE) 16P	1	
	IC802	ET2070F0C	IC	1	
	IC805	TA75S558F	IC	1	
	L801	VLQ0426J6R8	COIL 6.8UH	1	
	L803	VLQ0807K100	COIL 10UH	1	
	L804	VLQ0807K100	COIL 10UH	1	
	L805	VLQ0807K100	COIL 10UH	1	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	L881	VLQ0779K100	COIL 10UH	1	
	Q881	2SK1299-3S	TRANSISTOR	1	
	R802	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R805	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R807	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R808	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R832	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
	R834	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R835	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R836	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
	R841	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
	R849	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
	R850	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
	R851	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
	R852	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
	R878	ERJ2RHD223	M.RESISTOR CH 1/16W 22K	1	
	R879	ERJ2RHD183	M.RESISTOR CH 1/16W 18K	1	
	R880	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
	R881	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
	T881	ETJ09K31AM	TRANSFORMER	1	
			MISCELLANEOUS		
		VMZ2775	EVF BARRIER (B)	1	
		VMZ2774	EVF BARRIER (A)	1	
	■	VEP22281A	CDS/AGC C.B.A.	1	(RTL)
	C251	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C252	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C253	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C254	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C255	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C257	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
	C258	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C259	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
	C260	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
	C261	ECUX1H150JCQ	C.CAPACITOR CH 50V 15P	1	
	C264	ECUX1H330JCQ	C.CAPACITOR CH 50V 33P	1	
	C265	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
	C266	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
	C295	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
	D291	MA143	DIODE	1	
	FL251	VLF1438	FILTER	1	
	IC251	AN2108NFHQ	IC	1	
	L251	VLQ0779K100	COIL 10UH	1	
	L252	VLQ0426J270	COIL 27UH	1	
	L253	VLQ0808J6R8	COIL 6.8UH	1	
	PS202	VJS4009A040	CONNECTOR (FEMALE) 40P	1	
	Q251	XP4601	TRANSISTOR-TRANSISTOR	1	
	Q252	2SD2216	TRANSISTOR	1	
	Q291	2SC4626	TRANSISTOR	1	
	R251	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	R252	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
	R255	ERJ2GEJ561	M.RESISTOR CH 1/16W 560	1	
	R256	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
	R257	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
	R258	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
	R260	ERJ2GEJ561	M.RESISTOR CH 1/16W 560	1	
	R261	ERJ2GEJ123	M.RESISTOR CH 1/16W 12K	1	
	R263	ERJ2GEJ823	M.RESISTOR CH 1/16W 82K	1	
	R264	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
	R265	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
	R266	ERJ2GEJ184	M.RESISTOR CH 1/16W 180K	1	
	R292	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
			MISCELLANEOUS		
		VSC4809	SHIELD COVER (LOWER)	1	
	■	VEP06C74A	S/S POWER FLEX.CARD C.B.A	1	(RTL)
	B6101	VL1220/1FC	BATTERY	1	
	D6101	CL150UR	LED	1	
	P4201	VJP4002B002P	CONNECTOR (MALE) 2P	1	
	R6101	ERJ8GEYJ561	M.RESISTOR CH 1/8W 560	1	
	R6102	ERJ6GEY0R00	M.RESISTOR CH 1/10W 0	1	
	S6101	VSS0549	SWITCH	1	
	S6103	VSP0584	SWITCH	1	
	■	VEP00Z71A	TOP OPERATION FLEX.CARD	1	(RTL)
	D6701	CL170YG-CD	DIODE	1	
	FP6701	VJS2533B003	CONNECTOR (FEMALE) 3P	1	
	S6701	VSP1102	SWITCH	1	
	S6703	VSS0392	SWITCH	1	
	S6704	VSR0223	SWITCH	1	
			MISCELLANEOUS		
		VMP5791	VTR FIX ANGLE	1	
		VMP5792	OP FIX ANGLE	1	
	■	VEP06C60A	SENSOR FLEX. CARD	1	(RTL)
	IC991	DN8797MSC	IC	1	
	IC992	DN8797MSC	IC	1	
	■	VEK8456	LENS FLEX.	1	
			MISCELLANEOUS		
		CNA1312K01VT	PHOTO SENSOR	1	
		VEK8449	MR SENSOR U.	1	

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
		VJB20763	FLEX. CARD	1	
	■	VEP00Z81A	I/F C.B.A.	1	(RTL)
	PP1003	VJP4009A080	CONNECTOR (MALE) 80P	1	
	PS1003	VJS4029A080	CONNECTOR (FEMALE) 80P	1	
			MISCELLANEOUS		
		VMZ2861	I/F BARRIER	1	
		VGQ5180	BATT. CUSHION	1	
	■	VEP00Z68A	MULTI JACK C.B.A.	1	(RTL)
	PS3002	VJS4009A030	CONNECTOR (FEMALE) 30P	1	
	PS3003	VJS4024	MULTI JACK	1	


H
G
F
E
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A
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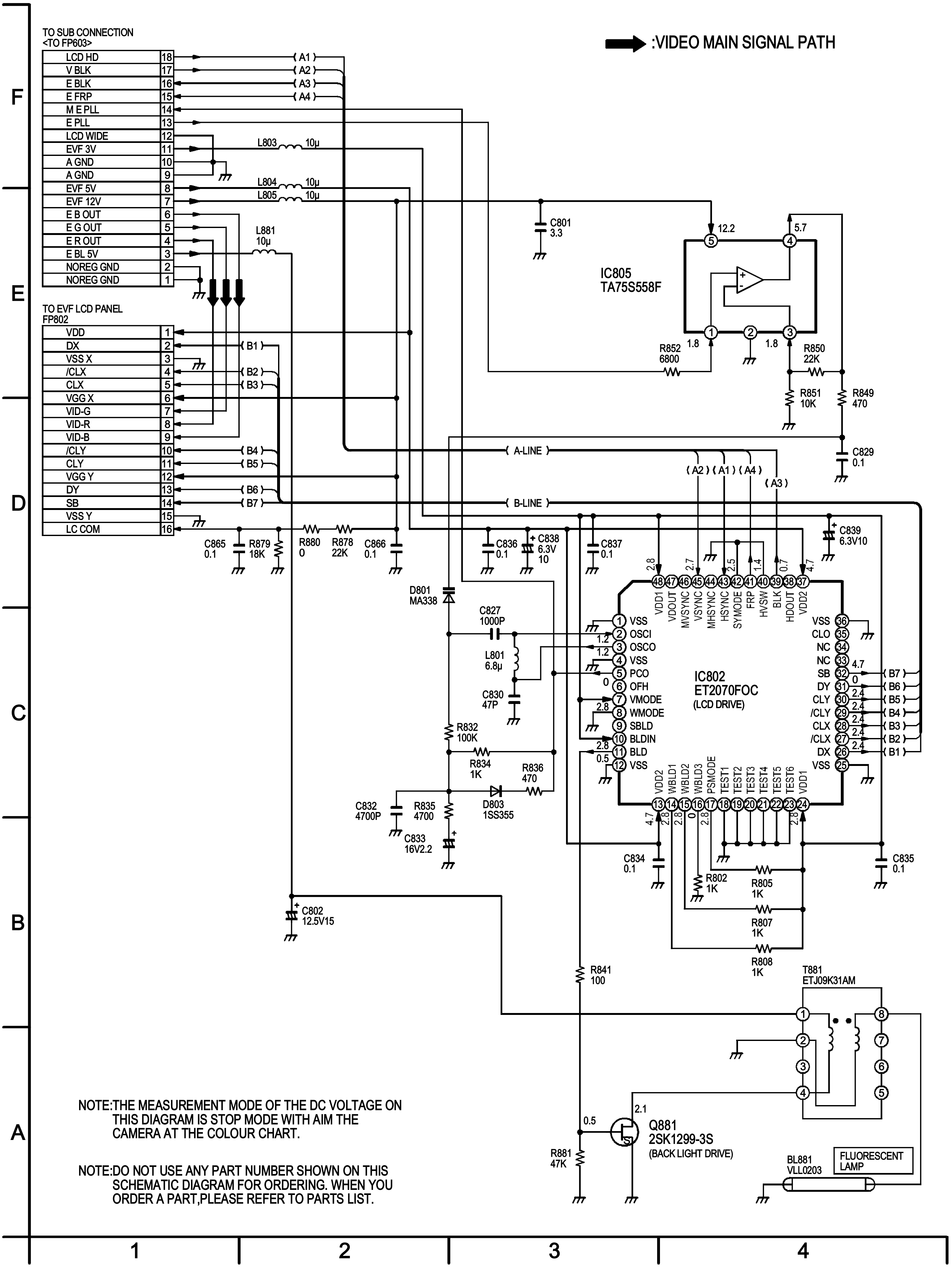
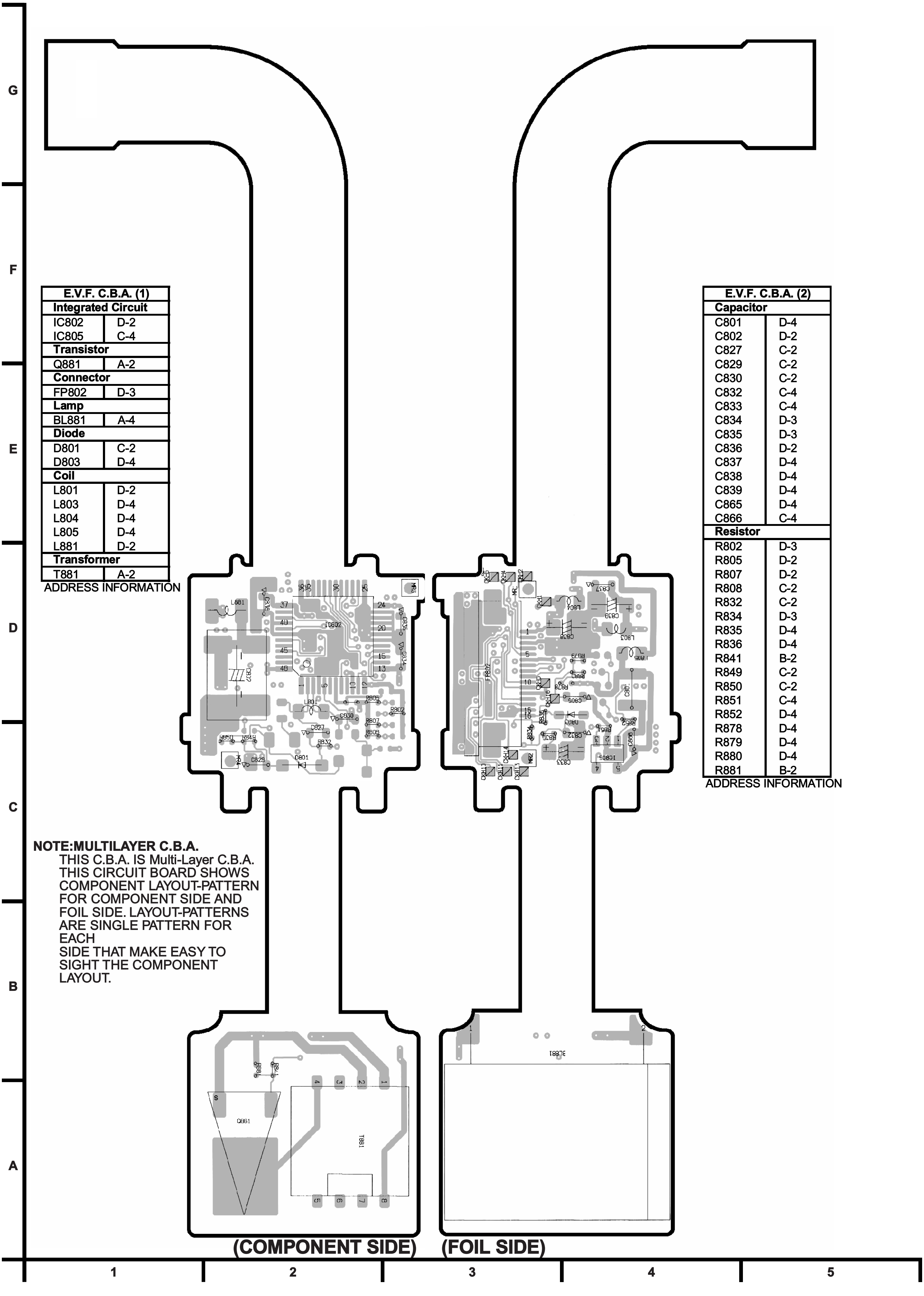
11
S/S POWER FLEX.CARD C.B.A.
•CAM/OFF/VCR
•POWER LED
•S/S
•CASSETTE DOWN
•LITHIUM BATTERY
SPEAKER UNIT
P4201
2 SPK OUT2
1 SPK OUT1
FP1002
1 C DOWN
2 S/S
3 SCAN2
4 VCR SW
5 CAM SW
6 D GND
7 SPK OUT2
8 SPK OUT1
9 POWER LED
10 LI BATT(+)
MIC
MIC UNIT
• TALLY LED
• EJECT
• IR SENSOR
• IR RECEIVER UNIT
FP4801
EJECT 1
D GND 2
D GND 3
REMOTE CTL 4
S 5V 5
D GND 6
D GND 7
TALLY LED 8
REG A5V 9
REG A5V 10
IR DET 11
MIC GND 12
MIC GND 13
A M OUT(L) 14
WIND SW (H) 15
A M OUT(R) 16
— 17
FP4001
1 A M OUT(R)
2 WIND SW (H)
3 A M OUT(L)
4 MIC GND
5 MIC GND
6 IR DET
7 REG A5V
8 REG A5V
9 TALLY LED
10 D GND
11 D GND
12 S 5V
13 REMOTE CTL
14 D GND
15 D GND
16 EJECT
17 —
MULTI JACK C.B.A.
PS3003
UART O 1 28 SERIAL CLOCK
D GND 2 27 CR POWER
CN (H) 3 26 MULTI 5V
UART I 4 25 SERIAL DATA
A LCH IN 5 24 D GND
D GND 6 23 —
— 7 22 Y OUT
A RCH IN 8 21 V GND
V GND 9 20 A RCH OUT
— 10 19 C OUT
DET2 11 18 LINE DET
— 12 17 A LCH OUT
— 13 16 V OUT
SE GND 14 15 SE GND
PS3002
CR POWER 16 15 SERIAL CLOCK
SERIAL DATA 17 14 MULTI 5V
— 18 13 D GND
D GND 19 12 D GND
D GND 20 11 D GND
D GND 21 10 Y OUT
C OUT 22 9 A RCH OUT
A LCH OUT 23 8 LINE DET
SE GND 24 7 V OUT
SE GND 25 6 D GND
DET2 26 5 D GND
D GND 27 4 D GND
A LCH IN 28 3 A RCH IN
CN (H) 29 2 D GND
UART O 30 1 UART I
PP3002
CR POWER 16 15 SERIAL CLOCK
SERIAL DATA 17 14 MULTI 5V
— 18 13 D GND
D GND 19 12 D GND
D GND 20 11 D GND
D GND 21 10 Y OUT
C OUT 22 9 A RCH OUT
A LCH OUT 23 8 LINE DET
SE GND 24 7 V OUT
SE GND 25 6 D GND
DET2 26 5 D GND
D GND 27 4 D GND
A LCH IN 28 3 A RCH IN
CN (H) 29 2 D GND
UART O 30 1 UART I
TO EVR
PP3001
CAM RESET 31 30 AD IN1
E2 DATA 32 29 V REF (L)
CAM TEST 33 28 AGC OUT
E2 CLOCK 34 27 CAM 5V
F VCC2 35 26 V OUT
CAM VD 36 25 CAM A GND
CAM SBO 37 24 V REF (H)
CAM SBI 38 23 FNO
CAM CLOCK 39 22 CP OB
CN (H) 40 21 CAM F VPP
— 41 20 CAM F VDD
AFST 42 19 IRIS OPEN
UART I 43 18 EVF H/2
UART O 44 17 D GND
VTR RESET 45 16 VIDEO VCO
VTR TEST (L) 46 15 ATF I
BST TEST 47 14 SPA
TCK 48 13 REC CUR
TMS 49 12 RF GND
TDO 50 11 ENVELOPE
TDI 51 10 HID
MIC CLOCK 52 9 MON G
MIC DATA 53 8 MON B
MON PLL 54 7 MON R
MON V COM 55 6 MON R
F VSS 56 5 F BUSY
F S DA 57 4 F OE
F S CLK 58 3 F VCC
F MODE 59 2 VCC9
F VEE 60 1 VCC41
FP3201
REC I 24
PB (H) 23
HID1 22
HID2 21
HID3 20
REC CTL 19
RA S TAB 18
INSR (H) 17
RF AGC OUT 16
— 15
ATF OUT 14
HSE 13
HA OUT 12
RF GND 11
REC C ADJ 10
REC CUR 9
A 3V(1) 8
HRA 5V 7
RF GND 6
RF GND 5
RF GND 4
RF GND 3
RF GND 2
RF GND 1
FP5001
GND 1
CH2F 2
CH2S 3
CH1S 4
CH1F 5
GND 6
GND 7
GND 8
HEAD AMP UNIT
MECHA.UNIT
CYL
CAP
JK3801
DV TERMINAL
MAIN C.B.A.
FP2204
8 M LOAD
7 M LOAD
6 M UNLOAD
5 M UNLOAD
4 POS1
3 POS2
2 POS3
1 D GND
FP2203
18 S TAB
17 D GND
16 D GND
15 NOREG GND
14 SENSOR LED
13 MIC CLOCK
12 VH(-)
11 T REEL(-)
10 T REEL(+)
9 VH(+)
8 MIC DATA
7 MIC VDD
6 S RFEL(-)
5 S RFEL(+)
4 S 3V
3 S PHOTO
2 S 3V
1 T PHOTO
FP2201
18 AFG2
17 D GND
16 AFG1
15 VMR
14 M3
13 M3
12 H2(+)
11 VH(-)
10 M2
9 M2
8 H1(+)
7 H2(-)
6 H1(-)
5 H3(+)
4 VH(+)
3 H3(-)
2 M1
1 M1
FP2202
10 FG(+)
9 COM
8 M2A
7 M2A
6 M1A
5 M1A
4 M3A
3 M3A
2 D GND
1 PG(+)
PP3004
E FRP 1 120 MON V COM
IRIS OPEN 2 119 MON PLL
CAM F VDD 3 118 MON B
CAM F VPP 4 117 MON G
CP OB 5 116 MON R
FNO 6 115 D GND
V REF (H) 7 114 D GND
A GND 8 113 D GND
A GND 9 112 D GND
TMS 10 111 TCK
EVR SBI 11 110 CAM RTN
EVR SBO 12 109 RTN FLD
EVR SCK 13 108 CAM RST
CAM SI 14 107 VTR T
CAM S CLK 15 106 CAM D3 OFF
CAM TDO 16 105 C V DATA
CAM T 17 104 CAM 0
T PB C0 18 103 T PB Y0
T PB C1 19 102 T PB Y1
T PB C2 20 101 T PB Y2
T PB C3 21 100 T PB Y3
PB HS 22 99 T PB Y4
PB VS 23 98 T PB Y5
CLK REF 24 97 T PB Y6
BST TEST 25 96 T PB Y7
IN H 26 95 IN V
Y SI0 27 94 C SI0
Y SI1 28 93 C SI1
Y SI2 29 92 C SI2
Y SI3 30 91 C SI3
Y SI4 31 90 C SI4
Y SI5 32 89 C SI5
Y SI6 33 88 C SI6
Y SI7 34 87 C SI7
TDI CAM 35 86 CLK CAM
A GND 36 85 IR DET
A GND 37 84 D GND
U/D CTL 38 83 D GND
L/R CTL 39 82 BL BRIGHT (H)
BLD BL CTL 40 81 E PLL
V COM 41 80 EVF BL CTL
LCD PLL 42 79 LCD HD
CHR R 43 78 V BLK
CHR G 44 77 CB OUT
CHR B 45 76 CR OUT
M SUBC R 46 75 LCD Y
M SUBC B 47 74 E SUBC R
M GAMMA1 48 73 E SUBC B
M RGB AMP 49 72 E GAMMA1
M CONTRAST 50 71 E BRIGHT
M BRIGHT 51 70 E COLOUR
M SUB R 52 69 E CONTRAST
M SUB B 53 68 E SUB R
M COLOUR 54 67 E SUB B
LCD ON (H) 55 66 EVF ON (H)
SCAN1 56 65 SCAN2
SCAN3 57 64 KEY IN4
KEY IN1 58 63 DEW
KEY IN3 59 62 FULL AUTO LED
SCAN4 60 61 KEY IN2
PP1001
REG A5V 40 41 REG D2V
REG A5V 39 42 REG D2V
HRA 5V 38 43 REG D3V
HRA 5V 37 44 REG D3V
V OUT 3V 36 45 A 3V(1)
A 3V(2) 35 46 A 3V(1)
D GND 34 47 D GND
D GND 33 48 D GND
D GND 32 49 D GND
D GND 31 50 D GND
D GND 30 51 D GND
A GND 29 52 A GND
A GND 28 53 A GND
A GND 27 54 A GND
A GND 26 55 A GND
A GND 25 56 A GND
A GND 24 57 A GND
A GND 23 58 A GND
DIF 3V 22 59 MEMORY 3V
DIF 3V 21 60 DAC 3V
REG 4V 20 61 SE GND
REG 4V 19 62 SE GND
NOREG GND 18 63 NOREG GND
NOREG GND 17 64 NOREG GND
NOREG GND 16 65 NOREG GND
NOREG GND 15 66 NOREG GND
NOREG 14 67 CYL VM
NOREG 13 68 CYL VM
CAP VM 12 69 CYL SW
CAP VM 11 70 S 3V
CAP SW 10 71 V REF
TRI WAVE 9 72 AGC OUT
S 5V 8 73 V REF (L)
MULTI 5V 7 74 AD IN
CCD ON (L) 6 75 CAM RESET
P ON (H) 5 76 E2 DATA
INN BATT (L) 4 77 CAM TEST
BATT (H) 3 78 E2 CLK
SPK 5V 2 79 CAM VD
AFST 1 80 —
A
B
C


:VIDEO MAIN SIGNAL PATH
TO SUB CONNECTION
<TO FP603>
LCD HD 18
V BLK 17
E BLK 16
E FRP 15
M E PLL 14
E PLL 13
LCD WIDE 12
EVF 3V 11
A GND 10
A GND 9
EVF 5V 8
EVF 12V 7
E B OUT 6
E G OUT 5
E R OUT 4
E BL 5V 3
NOREG GND 2
NOREG GND 1
A1
A2
A3
A4
L803 10µ
L804 10µ
L805 10µ
L881 10µ
C801 3.3
12.2
5.7
IC805
TA75S558F
1.8
1.8
R852 6800
R850 22K
R851 10K
R849 470
TO EVF LCD PANEL
FP802
VDD 1
DX 2
VSS X 3
/CLX 4
CLX 5
VGG X 6
VID-G 7
VID-R 8
VID-B 9
/CLY 10
CLY 11
VGG Y 12
DY 13
SB 14
VSS Y 15
LC COM 16
B1
B2
B3
B4
B5
B6
B7
A-LINE
B-LINE
C829 0.1
C839 6.3V10
C865 0.1
R879 18K
R880 0
R878 22K
C866 0.1
C836 0.1
C838 6.3V 10
C837 0.1
2.8
2.7
2.5
1.4
0.7
4.7
VDD1
VDOUT
MVSYNC
VSYNC
MHSYNC
HSYNC
SYMODE
FRP
HVSW
BLK
HDOUT
VDD2
D801 MA338
C827 1000P
L801 6.8µ
C830 47P
R832 100K
R834 1K
R836 470
D803 1SS355
C832 4700P
R835 4700
C833 16V2.2
1 VSS
2 OSCI
3 OSCO
4 VSS
5 PCO
6 OFH
7 VMODE
8 WMODE
9 SBLD
10 BLDIN
11 BLD
12 VSS
1.2
1.2
0
2.8
2.8
0.5
IC802
ET2070FOC
(LCD DRIVE)
VSS 36
CLO 35
NC 34
NC 33
SB 32
DY 31
CLY 30
/CLY 29
CLX 28
/CLX 27
DX 26
VSS 25
4.7
0
2.4
2.4
2.4
2.4
2.4
VDD2
WBLD1
WBLD2
WBLD3
PSMODE
TEST1
TEST2
TEST3
TEST4
TEST5
TEST6
VDD1
4.7
2.8
0
2.8
2.8
C834 0.1
C835 0.1
R802 1K
R805 1K
R807 1K
R808 1K
C802 12.5V15
R841 100
T881
ETJ09K31AM
0.5
2.1
Q881
2SK1299-3S
(BACK LIGHT DRIVE)
R881 47K
BL881
VLL0203
FLUORESCENT LAMP
F
E
D
C
B
A
1
2
3
4

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE COLOUR CHART.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


G
F
E
D
C
B
A
1
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4
5
L881
C836
IC802
C835
C834
C832
37
40
45
48
36
30
25
24
20
15
13
L801
R805
R802
C830
R807
R808
C827
R832
R850
R849
C829
D801
FP802
L804
C839
C838
L803
L805
R873
R878
R880
C865
C837
C801
C866
D803
R835
R836
R852
C833
IC805
R881
R841
Q881
T881
BL881
(COMPONENT SIDE)
(FOIL SIDE)

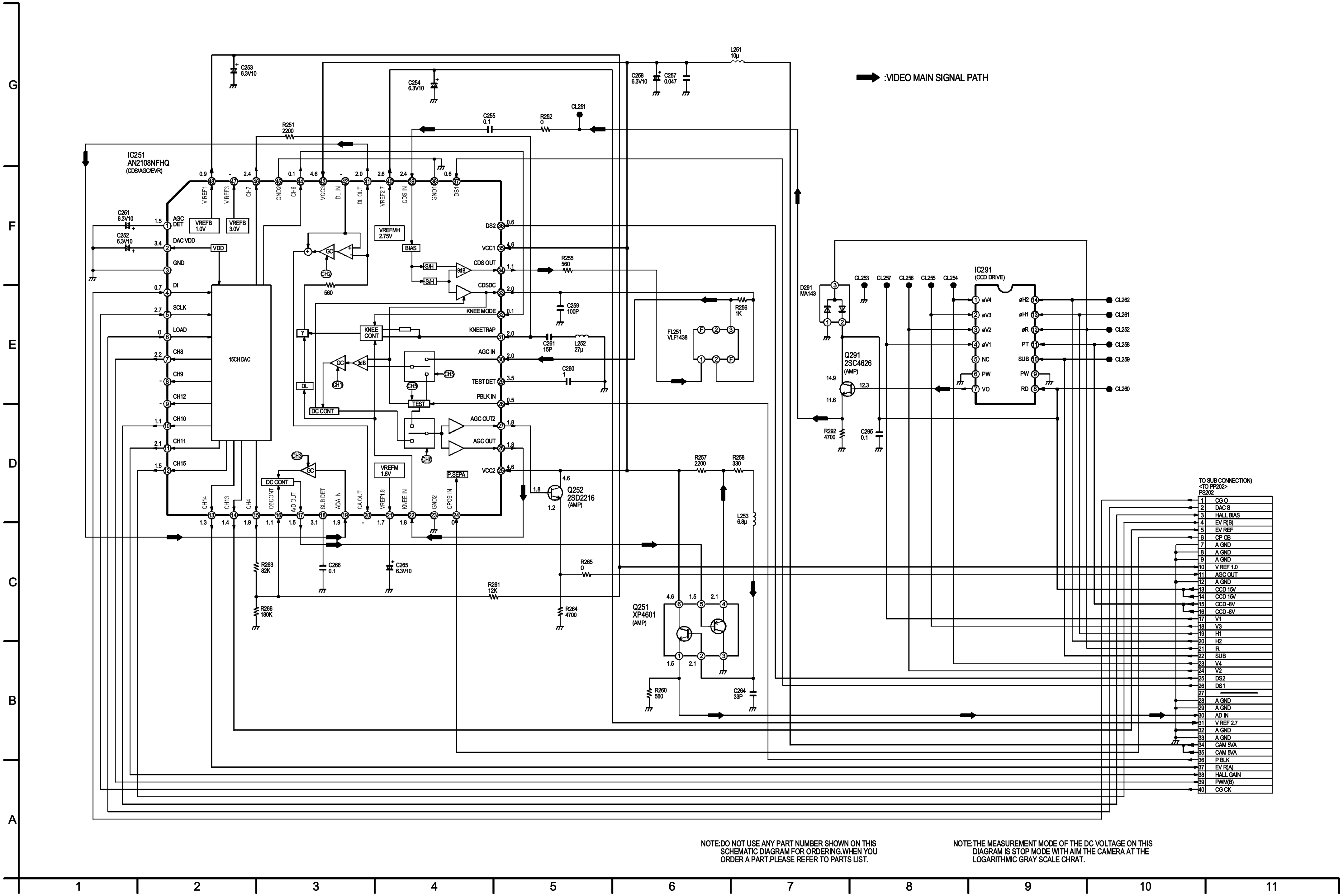
E.V.F. C.B.A. (1)	
Integrated Circuit	
IC802	D-2
IC805	C-4
Transistor	
Q881	A-2
Connector	
FP802	D-3
Lamp	
BL881	A-4
Diode	
D801	C-2
D803	D-4
Coil	
L801	D-2
L803	D-4
L804	D-4
L805	D-4
L881	D-2
Transformer	
T881	A-2

ADDRESS INFORMATION

E.V.F. C.B.A. (2)	
Capacitor	
C801	D-4
C802	D-2
C827	C-2
C829	C-2
C830	C-2
C832	C-4
C833	C-4
C834	D-3
C835	D-3
C836	D-2
C837	D-4
C838	D-4
C839	D-4
C865	D-4
C866	C-4
Resistor	
R802	D-3
R805	D-2
R807	D-2
R808	C-2
R832	C-2
R834	D-3
R835	D-4
R836	D-4
R841	B-2
R849	C-2
R850	C-2
R851	C-4
R852	D-4
R878	D-4
R879	D-4
R880	D-4
R881	B-2

ADDRESS INFORMATION

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A.
THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH
SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.


:VIDEO MAIN SIGNAL PATH
IC251
AN2108NFHQ
(CDS/AGC/EVR)
15CH DAC
VREFB 1.0V
VREFB 3.0V
VREFMH 2.75V
VREFM 1.8V
VDD
BIAS
S/H
KNEE CONT
DC CONT
TEST
P.SEPA
AGC DET
DAC VDD
GND
DI
SCLK
LOAD
CH8
CH9
CH12
CH10
CH11
CH15
DS2
VCC1
CDS OUT
CDSDC
KNEE MODE
KNEETRAP
AGC IN
TEST DET
PBLK IN
AGC OUT2
AGC OUT
VCC2
C251 6.3V10
C252 6.3V10
C253 6.3V10
C254 6.3V10
C255 0.1
C258 6.3V10
C257 0.047
C259 100P
C260 1
C261 15P
C264 33P
C265 6.3V10
C266 0.1
C295 0.1
R251 2200
R252 0
R255 560
R256 1K
R257 2200
R258 330
R260 560
R261 12K
R263 82K
R264 4700
R265 0
R266 180K
R292 4700
L251 10µ
L252 27µ
L253 6.8µ
CL251
FL251 VLF1438
Q252 2SD2216 (AMP)
Q251 XP4601 (AMP)
Q291 2SC4626 (AMP)
D291 MA143
IC291 (CCD DRIVE)
øV4
øV3
øV2
øV1
NC
PW
VO
øH2
øH1
øR
PT
SUB
RD
CL253
CL257
CL256
CL255
CL254
CL262
CL261
CL252
CL258
CL259
CL260
TO SUB CONNECTION)
<TO PP202>
PS202
1 CG O
2 DAC S
3 HALL BIAS
4 EV R(B)
5 EV REF
6 CP OB
7 A GND
8 A GND
9 A GND
10 V REF 1.0
11 AGC OUT
12 A GND
13 CCD 15V
14 CCD 15V
15 CCD -8V
16 CCD -8V
17 V1
18 V3
19 H1
20 H2
21 R
22 SUB
23 V4
24 V2
25 DS2
26 DS1
27
28 A GND
29 A GND
30 AD IN
31 V REF 2.7
32 A GND
33 A GND
34 CAM 5VA
35 CAM 5VA
36 P BLK
37 EV R(A)
38 HALL GAIN
39 PWM(B)
40 CG CK
G
F
E
D
C
B
A
1
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3
4
5
6
7
8
9
10
11

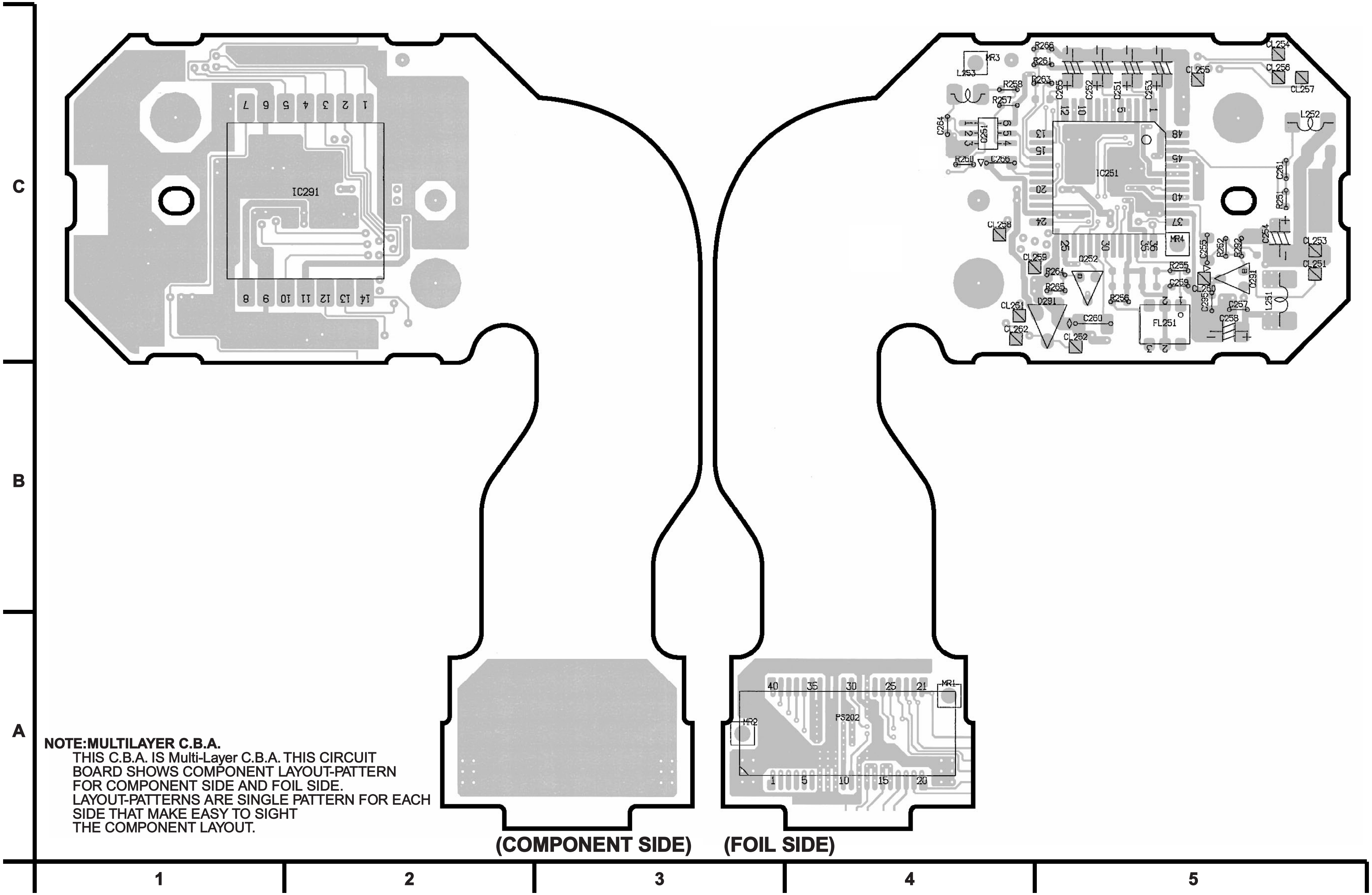
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART.PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHRAT.

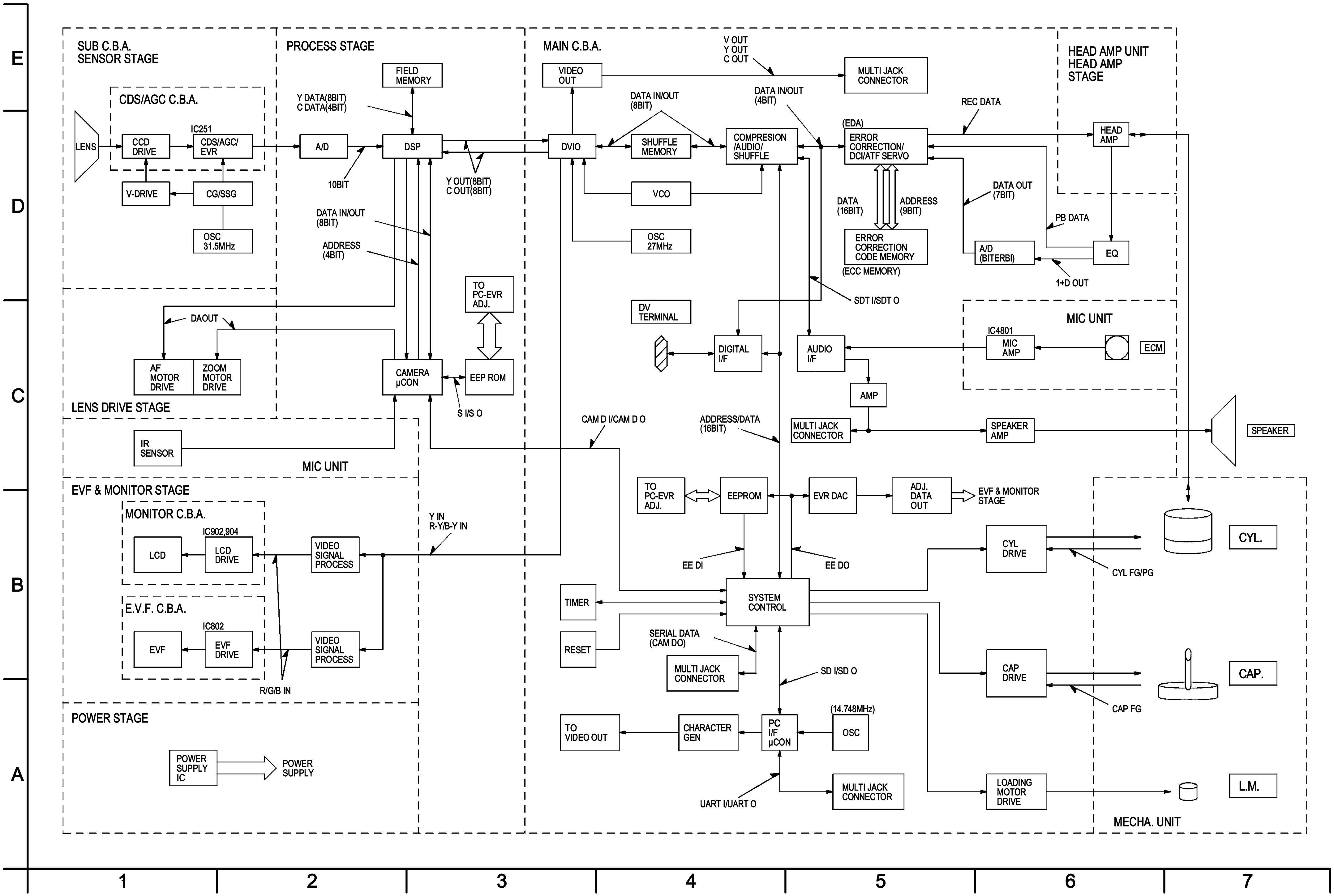
CDS/AGC C.B.A.

Integrated Circuit		Q291	C-5	CL253	C-5	CL259	C-5	**Filter**		**Capacitor**		C257	C-5	C265	C-5	R255	C-5	R263	C-5
IC251	C-5	**Connector**		CL254	C-5	CL260	C-5	FL251	C-5	C251	C-5	C258	C-5	C266	C-4	R256	C-5	R264	C-5
IC291	C-2	PS202	A-4	CL255	C-5	CL261	C-4	**Coil**		C252	C-5	C259	C-5	C295	C-5	R257	C-4	R265	C-5
Transistor		**Test Point**		CL256	C-5	CL262	C-4	L251	C-5	C253	C-5	C260	C-5	**Resistor**		R258	C-4	R266	C-5
Q251	C-4	CL251	C-5	CL257	C-5	**Diode**		L252	C-5	C254	C-5	C261	C-5	R251	C-5	R260	C-4	R292	C-5
Q252	C-5	CL252	C-5	CL258	C-4	D291	C-5	L253	C-4	C255	C-5	C264	C-4	R252	C-5	R261	C-5		

ADDRESS INFORMATION


C
B
A
1
2
3
4
5
IC291
IC251
PS202
FL251
Q252
D291
L251
L252
L253
MR1
MR2
MR3
MR4
CL251
CL252
CL253
CL254
CL255
CL256
CL257
CL258
CL259
CL260
CL261
CL262
C251
C252
C253
C254
C255
C257
C258
C260
C261
C264
C265
C266
C295
R251
R252
R255
R256
R257
R258
R260
R261
R263
R264
R265
R266
R292
(COMPONENT SIDE)
(FOIL SIDE)

NOTE:MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.


E
D
C
B
A
1
2
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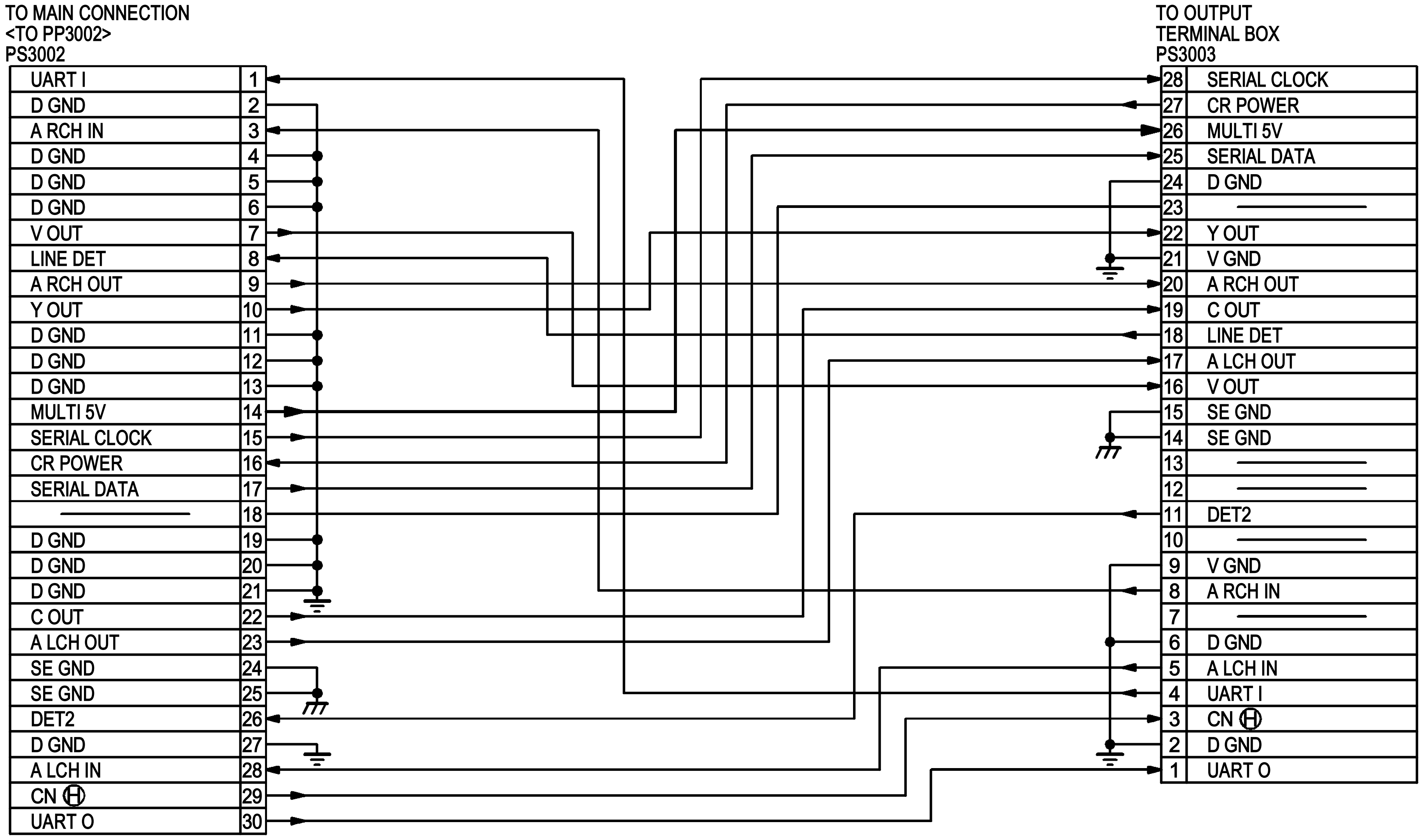
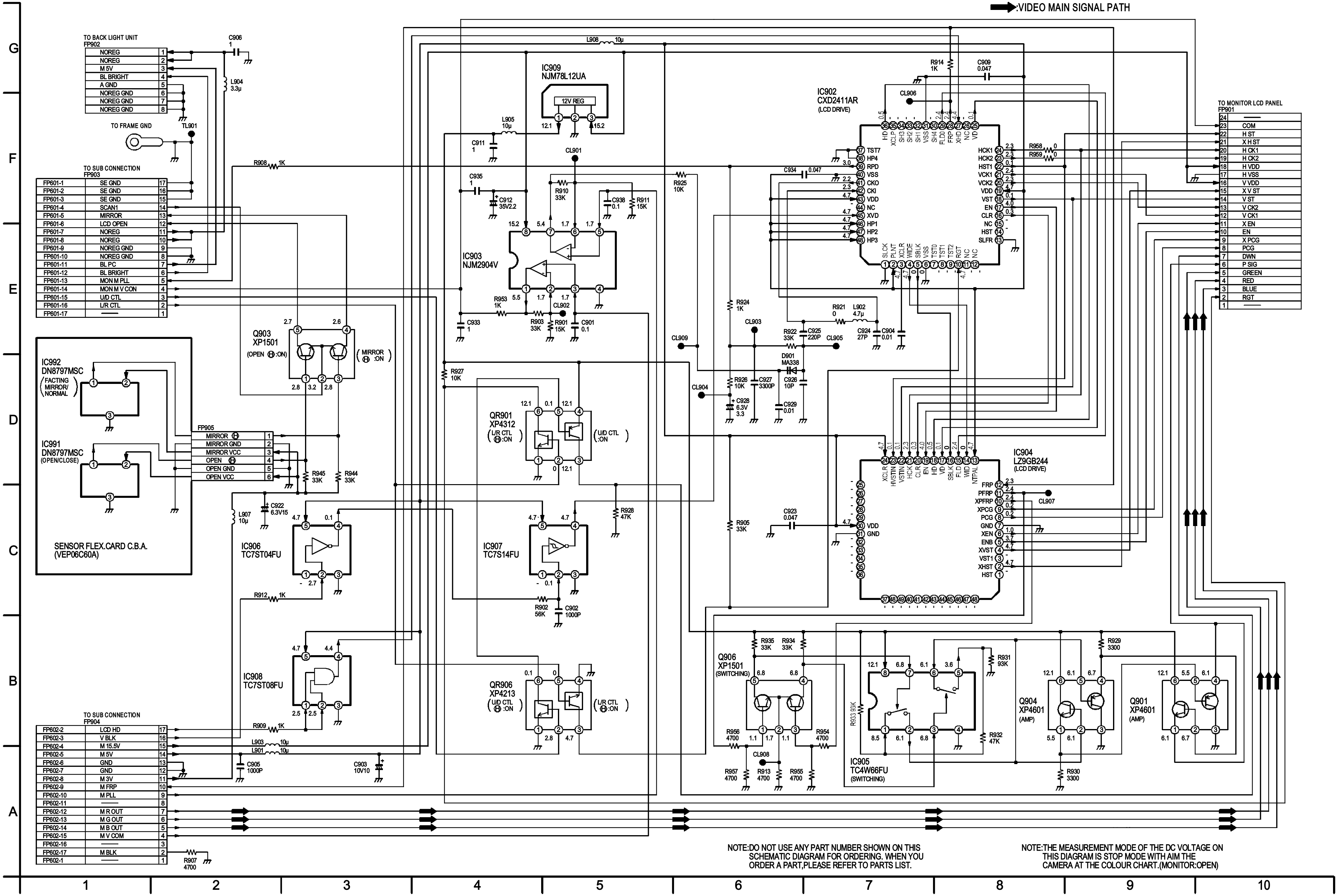
5
6
7
SUB C.B.A.
SENSOR STAGE
CDS/AGC C.B.A.
LENS
CCD DRIVE
IC251
CDS/AGC/ EVR
V-DRIVE
CG/SSG
OSC 31.5MHz
PROCESS STAGE
FIELD MEMORY
Y DATA(8BIT)
C DATA(4BIT)
A/D
DSP
10BIT
Y OUT(8BIT)
C OUT(8BIT)
DATA IN/OUT (8BIT)
ADDRESS (4BIT)
TO PC-EVR ADJ.
EEP ROM
CAMERA µCON
S I/S O
DAOUT
AF MOTOR DRIVE
ZOOM MOTOR DRIVE
LENS DRIVE STAGE
IR SENSOR
MIC UNIT
EVF & MONITOR STAGE
MONITOR C.B.A.
IC902,904
LCD
LCD DRIVE
VIDEO SIGNAL PROCESS
Y IN
R-Y/B-Y IN
E.V.F. C.B.A.
IC802
EVF
EVF DRIVE
VIDEO SIGNAL PROCESS
R/G/B IN
POWER STAGE
POWER SUPPLY IC
POWER SUPPLY
MAIN C.B.A.
VIDEO OUT
V OUT
Y OUT
C OUT
MULTI JACK CONNECTOR
DATA IN/OUT (8BIT)
DATA IN/OUT (4BIT)
DVIO
SHUFFLE MEMORY
COMPRESION /AUDIO/ SHUFFLE
VCO
OSC 27MHz
REC DATA
(EDA)
ERROR CORRECTION/ DCI/ATF SERVO
DATA (16BIT)
ADDRESS (9BIT)
ERROR CORRECTION CODE MEMORY
(ECC MEMORY)
DATA OUT (7BIT)
PB DATA
A/D (BITERBI)
EQ
1+D OUT
HEAD AMP UNIT
HEAD AMP STAGE
HEAD AMP
SDT I/SDT O
DV TERMINAL
DIGITAL I/F
AUDIO I/F
MIC UNIT
IC4801
MIC AMP
ECM
AMP
CAM D I/CAM D O
ADDRESS/DATA (16BIT)
MULTI JACK CONNECTOR
SPEAKER AMP
SPEAKER
TO PC-EVR ADJ.
EEPROM
EVR DAC
ADJ. DATA OUT
EVF & MONITOR STAGE
EE DI
EE DO
CYL DRIVE
CYL FG/PG
CYL.
TIMER
RESET
SYSTEM CONTROL
SERIAL DATA (CAM DO)
MULTI JACK CONNECTOR
SD I/SD O
CAP DRIVE
CAP FG
CAP.
TO VIDEO OUT
CHARACTER GEN
PC I/F µCON
(14.748MHz)
OSC
UART I/UART O
MULTI JACK CONNECTOR
LOADING MOTOR DRIVE
L.M.
MECHA. UNIT

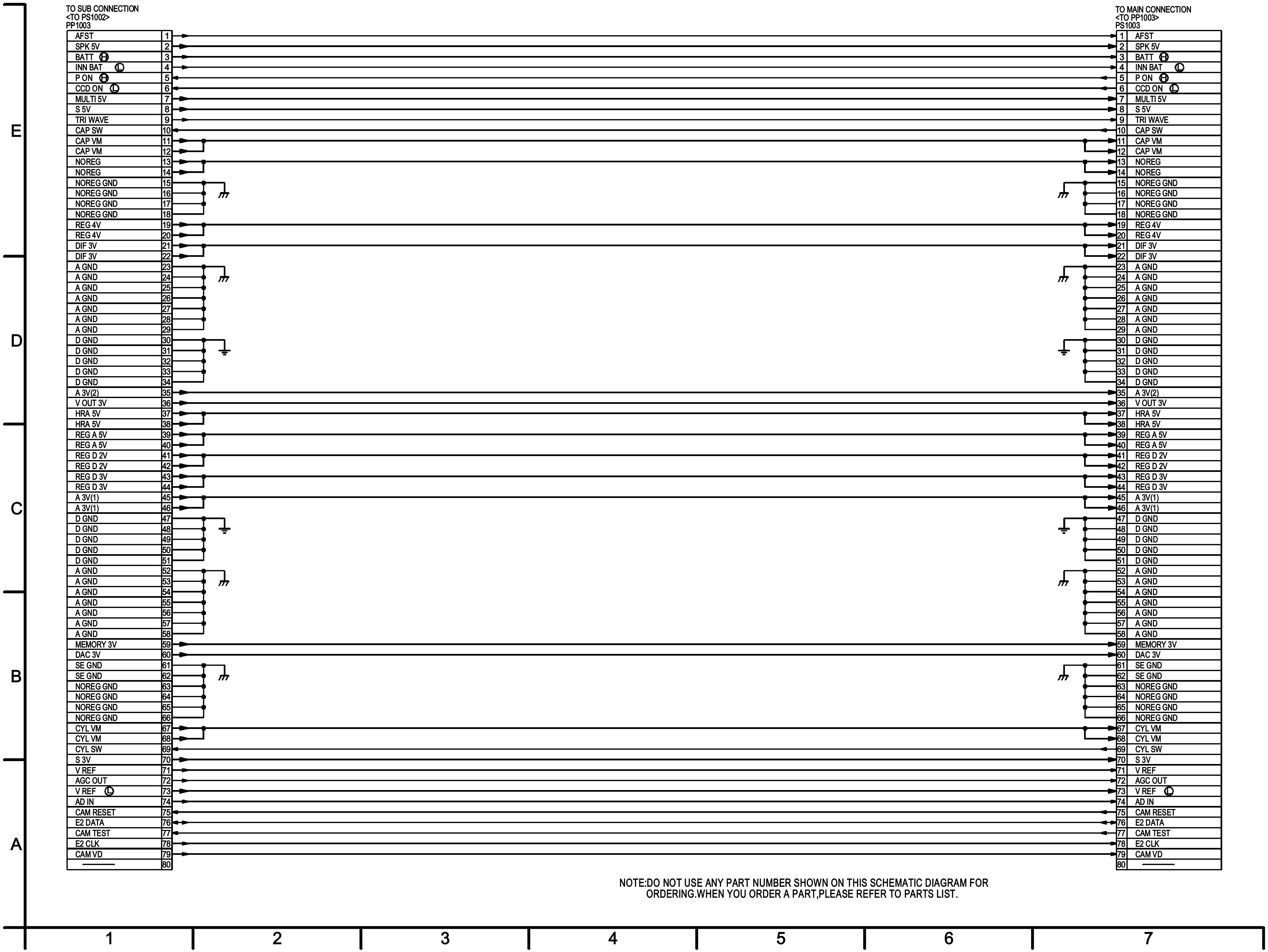

TO MAIN CONNECTION
<TO PP3002>
PS3002
1 UART I
2 D GND
3 A RCH IN
4 D GND
5 D GND
6 D GND
7 V OUT
8 LINE DET
9 A RCH OUT
10 Y OUT
11 D GND
12 D GND
13 D GND
14 MULTI 5V
15 SERIAL CLOCK
16 CR POWER
17 SERIAL DATA
18
19 D GND
20 D GND
21 D GND
22 C OUT
23 A LCH OUT
24 SE GND
25 SE GND
26 DET2
27 D GND
28 A LCH IN
29 CN Ⓗ
30 UART O
TO OUTPUT
TERMINAL BOX
PS3003
28 SERIAL CLOCK
27 CR POWER
26 MULTI 5V
25 SERIAL DATA
24 D GND
23
22 Y OUT
21 V GND
20 A RCH OUT
19 C OUT
18 LINE DET
17 A LCH OUT
16 V OUT
15 SE GND
14 SE GND
13
12
11 DET2
10
9 V GND
8 A RCH IN
7
6 D GND
5 A LCH IN
4 UART I
3 CN Ⓗ
2 D GND
1 UART O
B
A
1
2
3
4

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

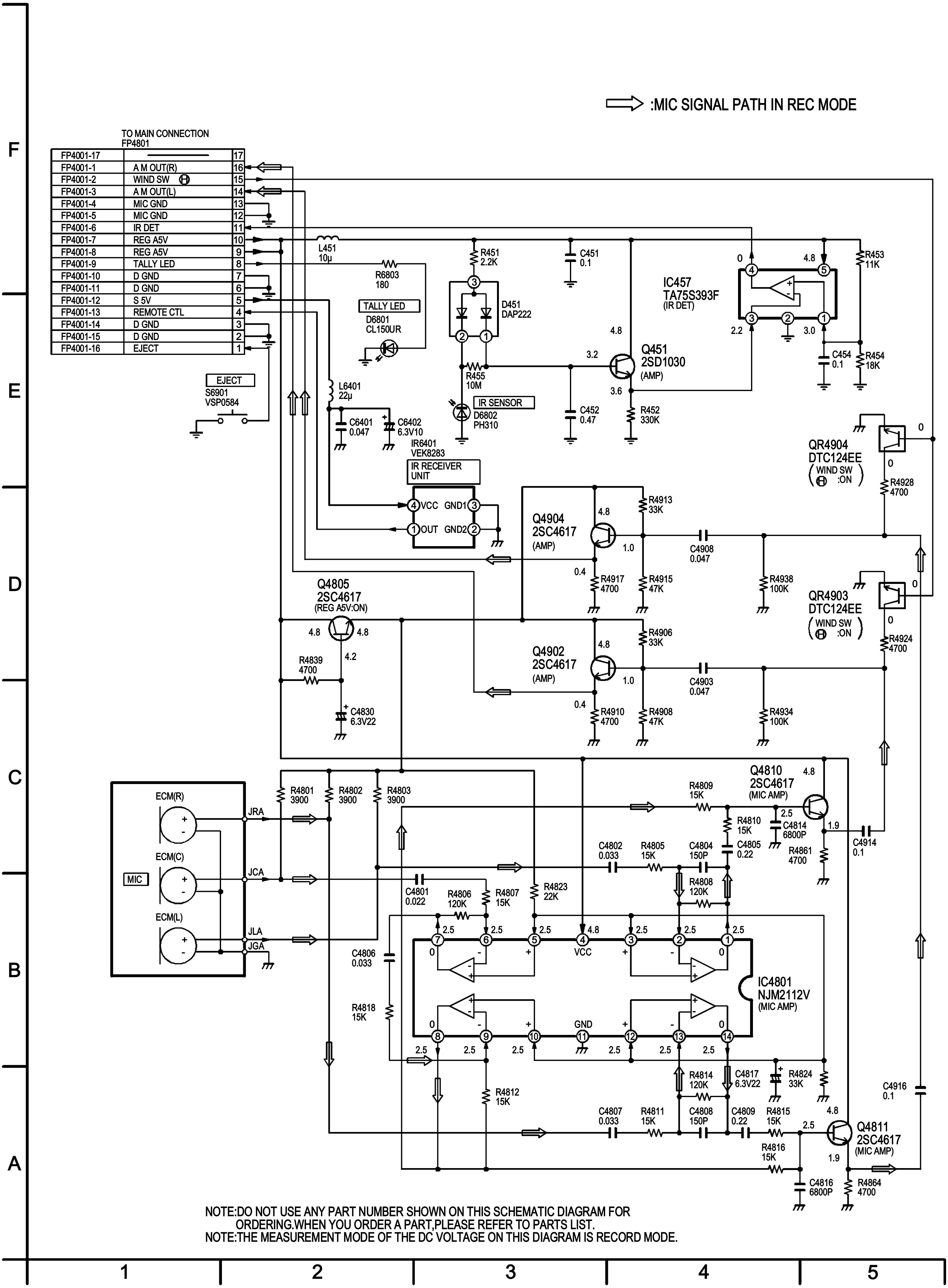

:VIDEO MAIN SIGNAL PATH
TO BACK LIGHT UNIT
FP902
NOREG
NOREG
M 5V
BL BRIGHT
A GND
NOREG GND
NOREG GND
NOREG GND
C906
1
L904
3.3µ
TO FRAME GND
TL901
TO SUB CONNECTION
FP903
FP601-1 SE GND
FP601-2 SE GND
FP601-3 SE GND
FP601-4 SCAN1
FP601-5 MIRROR
FP601-6 LCD OPEN
FP601-7 NOREG
FP601-8 NOREG
FP601-9 NOREG GND
FP601-10 NOREG GND
FP601-11 BL PC
FP601-12 BL BRIGHT
FP601-13 MON M PLL
FP601-14 MON M V CON
FP601-15 U/D CTL
FP601-16 L/R CTL
FP601-17
R908 1K
L908 10µ
IC909
NJM78L12UA
12V REG
12.1
15.2
L905
10µ
C911
1
CL901
C935
1
C912
35V2.2
R910
33K
C938
0.1
R911
15K
IC903
NJM2904V
15.2
5.4
1.7
1.7
5.5
1.7
1.7
R953
1K
CL902
C933
1
R903
33K
R901
15K
C901
0.1
Q903
XP1501
(OPEN ⊖:ON)
(MIRROR ⊖:ON)
2.7
2.6
2.8
3.2
2.8
IC992
DN8797MSC
(FACTING MIRROR/ NORMAL)
IC991
DN8797MSC
(OPEN/CLOSE)
FP905
MIRROR ⊖
MIRROR GND
MIRROR VCC
OPEN ⊖
OPEN GND
OPEN VCC
R945
33K
R944
33K
SENSOR FLEX.CARD C.B.A.
(VEP06C60A)
L907
10µ
C922
6.3V15
IC906
TC7ST04FU
4.7
0.1
2.7
R912 1K
IC908
TC7ST08FU
4.7
4.4
2.5
2.5
R909 1K
R927
10K
QR901
XP4312
(L/R CTL ⊖:ON)
(U/D CTL :ON)
12.1
0.1
12.1
0
12.1
IC907
TC7S14FU
4.7
4.7
0.1
R902
56K
C902
1000P
R928
47K
QR906
XP4213
(U/D CTL ⊖:ON)
(L/R CTL ⊖:ON)
0.1
0
2.8
4.7
TO SUB CONNECTION
FP904
FP602-2 LCD HD
FP602-3 V BLK
FP602-4 M 15.5V
FP602-5 M 5V
FP602-6 GND
FP602-7 GND
FP602-8 M 3V
FP602-9 M FRP
FP602-10 M PLL
FP602-11
FP602-12 M R OUT
FP602-13 M G OUT
FP602-14 M B OUT
FP602-15 M V COM
FP602-16
FP602-17 M BLK
FP602-1
L903 10µ
L901 10µ
C905
1000P
C903
10V10
R907
4700
R925
10K
R924
1K
CL903
CL909
R922
33K
C925
220P
CL905
R921
0
L902
4.7µ
C924
27P
C904
0.01
D901
MA338
C926
10P
R926
10K
C927
3300P
C929
0.01
CL904
C928
6.3V
3.3
R905
33K
C923
0.047
R914
1K
C909
0.047
CL906
IC902
CXD2411AR
(LCD DRIVE)
C934 0.047
TST7 HP4 RPD VSS CKO CKI VDD NC XVD HP1 HP2 HP3
HD XCLP SH3 SH2 SH1 VSS SH4 FLD FRP XHD NC VD
HCK1 HCK2 HST1 VCK1 VCK2 VDD VST EN CLR NC HST SLFR
SLCK PLNT XCLR WIDE SBLK VSS TST0 TST1 TST2 RGT NC NC
R958 0
R959 0
IC904
LZ9GB244
(LCD DRIVE)
XCLR HVSTIN VSTIN HCK CLR EN HD VD SBLK FLD WID NTPAL
FRP PFRP XPFRP XPCG PCG GND XEN ENB XVST VST1 XHST HST
VDD GND
CL907
TO MONITOR LCD PANEL
FP901
COM
H ST
X H ST
H CK1
H CK2
H VDD
H VSS
V VDD
X V ST
V ST
V CK2
V CK1
X EN
EN
X PCG
PCG
DWN
P SIG
GREEN
RED
BLUE
RGT
Q906
XP1501
(SWITCHING)
6.8
6.8
R935
33K
R934
33K
R956
4700
R954
4700
1.1
1.7
1.1
CL908
R957
4700
R913
4700
R955
4700
IC905
TC4W66FU
(SWITCHING)
12.1
6.8
6.1
3.6
8.5
6.1
6.8
R933 93K
R931
93K
R932
47K
Q904
XP4601
(AMP)
12.1
6.1
6.7
5.5
6.1
R930
3300
R929
3300
Q901
XP4601
(AMP)
12.1
5.5
6.1
6.1
6.7
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE COLOUR CHART.(MONITOR:OPEN)


TO SUB CONNECTION
<TO PS1002>
PP1003
AFST 1
SPK 5V 2
BATT Ⓗ 3
INN BAT Ⓛ 4
P ON Ⓗ 5
CCD ON Ⓛ 6
MULTI 5V 7
S 5V 8
TRI WAVE 9
CAP SW 10
CAP VM 11
CAP VM 12
NOREG 13
NOREG 14
NOREG GND 15
NOREG GND 16
NOREG GND 17
NOREG GND 18
REG 4V 19
REG 4V 20
DIF 3V 21
DIF 3V 22
A GND 23
A GND 24
A GND 25
A GND 26
A GND 27
A GND 28
A GND 29
D GND 30
D GND 31
D GND 32
D GND 33
D GND 34
A 3V(2) 35
V OUT 3V 36
HRA 5V 37
HRA 5V 38
REG A 5V 39
REG A 5V 40
REG D 2V 41
REG D 2V 42
REG D 3V 43
REG D 3V 44
A 3V(1) 45
A 3V(1) 46
D GND 47
D GND 48
D GND 49
D GND 50
D GND 51
A GND 52
A GND 53
A GND 54
A GND 55
A GND 56
A GND 57
A GND 58
MEMORY 3V 59
DAC 3V 60
SE GND 61
SE GND 62
NOREG GND 63
NOREG GND 64
NOREG GND 65
NOREG GND 66
CYL VM 67
CYL VM 68
CYL SW 69
S 3V 70
V REF 71
AGC OUT 72
V REF Ⓛ 73
AD IN 74
CAM RESET 75
E2 DATA 76
CAM TEST 77
E2 CLK 78
CAM VD 79
80
TO MAIN CONNECTION
<TO PP1003>
PS1003
1 AFST
2 SPK 5V
3 BATT Ⓗ
4 INN BAT Ⓛ
5 P ON Ⓗ
6 CCD ON Ⓛ
7 MULTI 5V
8 S 5V
9 TRI WAVE
10 CAP SW
11 CAP VM
12 CAP VM
13 NOREG
14 NOREG
15 NOREG GND
16 NOREG GND
17 NOREG GND
18 NOREG GND
19 REG 4V
20 REG 4V
21 DIF 3V
22 DIF 3V
23 A GND
24 A GND
25 A GND
26 A GND
27 A GND
28 A GND
29 A GND
30 D GND
31 D GND
32 D GND
33 D GND
34 D GND
35 A 3V(2)
36 V OUT 3V
37 HRA 5V
38 HRA 5V
39 REG A 5V
40 REG A 5V
41 REG D 2V
42 REG D 2V
43 REG D 3V
44 REG D 3V
45 A 3V(1)
46 A 3V(1)
47 D GND
48 D GND
49 D GND
50 D GND
51 D GND
52 A GND
53 A GND
54 A GND
55 A GND
56 A GND
57 A GND
58 A GND
59 MEMORY 3V
60 DAC 3V
61 SE GND
62 SE GND
63 NOREG GND
64 NOREG GND
65 NOREG GND
66 NOREG GND
67 CYL VM
68 CYL VM
69 CYL SW
70 S 3V
71 V REF
72 AGC OUT
73 V REF Ⓛ
74 AD IN
75 CAM RESET
76 E2 DATA
77 CAM TEST
78 E2 CLK
79 CAM VD
80
E
D
C
B
A
1
2
3
4
5
6
7

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


:MIC SIGNAL PATH IN REC MODE
TO MAIN CONNECTION
FP4801
FP4001-17 17
FP4001-1 A M OUT(R) 16
FP4001-2 WIND SW 15
FP4001-3 A M OUT(L) 14
FP4001-4 MIC GND 13
FP4001-5 MIC GND 12
FP4001-6 IR DET 11
FP4001-7 REG A5V 10
FP4001-8 REG A5V 9
FP4001-9 TALLY LED 8
FP4001-10 D GND 7
FP4001-11 D GND 6
FP4001-12 S 5V 5
FP4001-13 REMOTE CTL 4
FP4001-14 D GND 3
FP4001-15 D GND 2
FP4001-16 EJECT 1
EJECT
S6901
VSP0584
L451
10µ
R6803
180
TALLY LED
D6801
CL150UR
L6401
22µ
C6401
0.047
C6402
6.3V10
IR6401
VEK8283
IR RECEIVER UNIT
VCC GND1 OUT GND2
R451
2.2K
D451
DAP222
R455
10M
IR SENSOR
D6802
PH310
C451
0.1
C452
0.47
Q451
2SD1030
(AMP)
R452
330K
IC457
TA75S393F
(IR DET)
R453
11K
C454
0.1
R454
18K
QR4904
DTC124EE
(WIND SW :ON)
R4928
4700
Q4904
2SC4617
(AMP)
R4913
33K
C4908
0.047
R4917
4700
R4915
47K
R4938
100K
QR4903
DTC124EE
(WIND SW :ON)
R4924
4700
Q4805
2SC4617
(REG A5V:ON)
R4839
4700
C4830
6.3V22
Q4902
2SC4617
(AMP)
R4906
33K
C4903
0.047
R4910
4700
R4908
47K
R4934
100K
MIC
ECM(R)
ECM(C)
ECM(L)
JRA
JCA
JLA
JGA
R4801
3900
R4802
3900
R4803
3900
Q4810
2SC4617
(MIC AMP)
R4809
15K
R4810
15K
C4814
6800P
R4861
4700
C4914
0.1
C4802
0.033
R4805
15K
C4804
150P
C4805
0.22
C4801
0.022
R4806
120K
R4807
15K
R4823
22K
R4808
120K
C4806
0.033
R4818
15K
IC4801
NJM2112V
(MIC AMP)
VCC
GND
R4812
15K
R4814
120K
C4817
6.3V22
R4824
33K
C4916
0.1
C4807
0.033
R4811
15K
C4808
150P
C4809
0.22
R4815
15K
R4816
15K
C4816
6800P
Q4811
2SC4617
(MIC AMP)
R4864
4700
F E D C B A
1 2 3 4 5

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

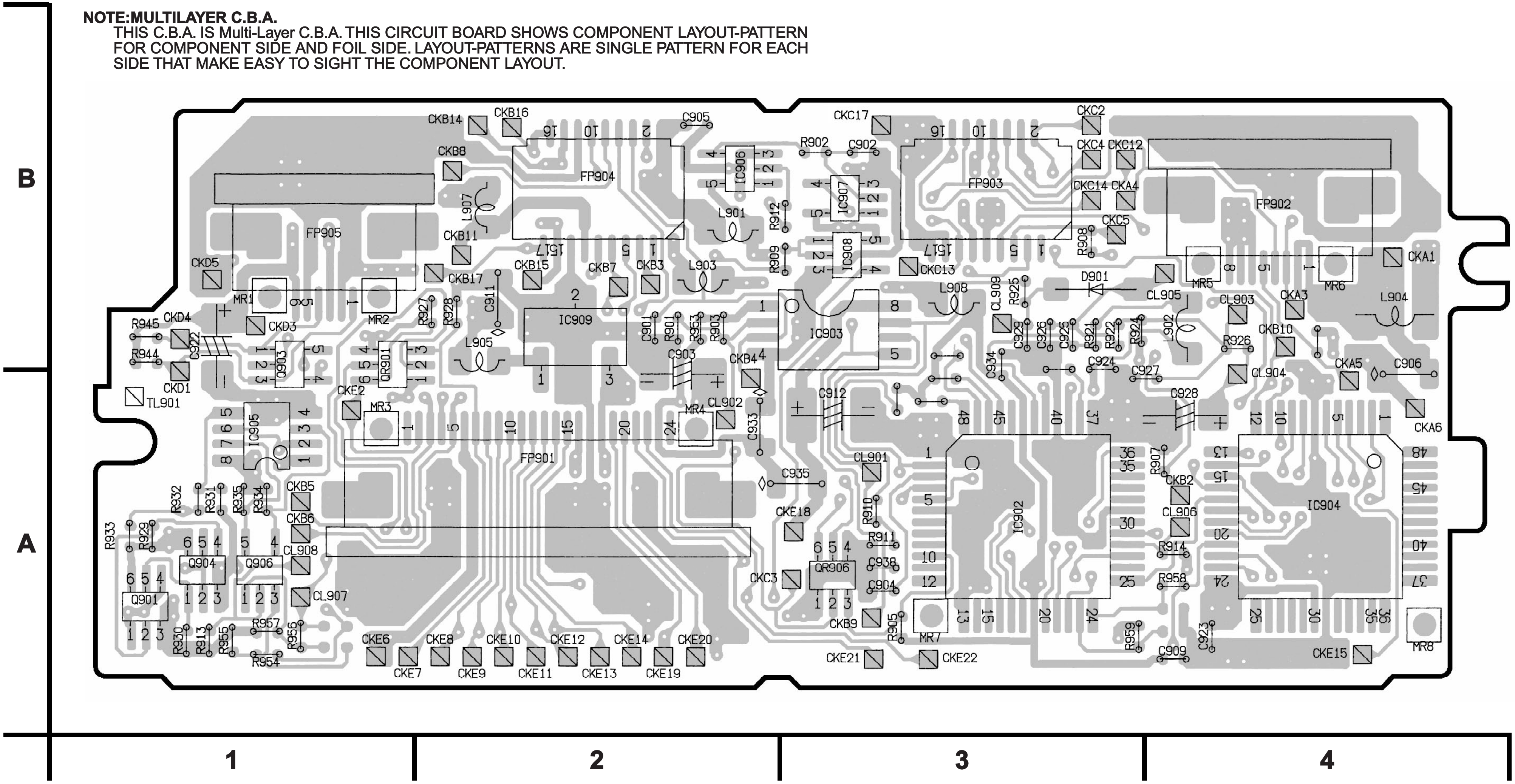
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS RECORD MODE.

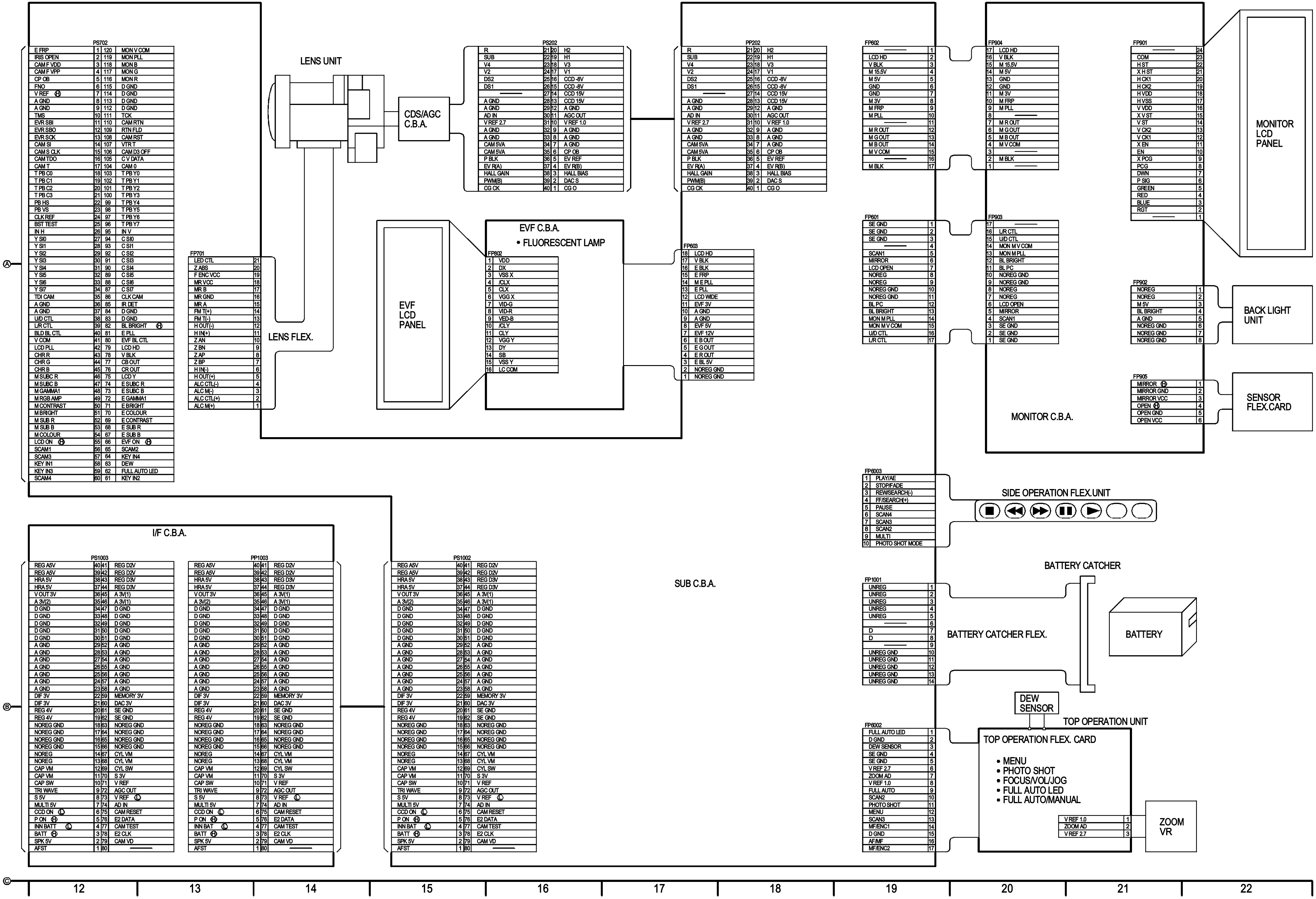
MONITOR C.B.A.																	
Integrated Circuit		Q904	A-1	CL907	A-1	**Coil**		C904	A-3	C928	A-4	R908	B-3	R927	B-2	R954	A-1
IC902	A-3	Q906	A-1	CL908	A-1	L901	B-2	C905	B-2	C929	B-3	R909	B-2	R928	B-2	R955	A-1
IC903	B-3	**Transistor & Resistor**		CL909	B-3	L902	B-4	C906	A-4	C933	A-2	R910	A-3	R929	A-1	R956	A-1
IC904	A-4	QR901	B-1	TL901	A-1	L903	B-2	C909	A-4	C934	A-3	R911	A-3	R930	A-1	R957	A-1
IC905	A-1	QR906	A-3	**Diode**		L904	B-4	C911	B-2	C935	A-3	R912	B-2	R931	A-1	R958	A-4
IC906	B-2	**Test Point**		D901	B-3	L905	B-2	C912	A-3	C938	A-3	R913	A-1	R932	A-1	R959	A-3
IC907	B-3	CL901	A-3	**Connector**		L907	B-2	C922	B-1	**Resistor**		R914	A-4	R933	A-1		
IC908	B-3	CL902	A-2	FP901	A2	L908	B-3	C923	A-4	R901	B-2	R921	B-3	R934	A-1		
IC909	B-2	CL903	B-4	FP902	B-4	**Capacitor**		C924	A-3	R902	B-3	R922	B-3	R935	A-1		
Transistor		CL904	A-4	FP903	B-3	C901	B-2	C925	B-3	R903	B-2	R924	B-3	R944	B-1		
Q901	A-1	CL905	B-4	FP904	B-2	C902	B-3	C926	B-3	R905	A-3	R925	B-3	R945	B-1		
Q903	B-1	CL906	A-4	FP905	B-1	C903	A-2	C927	A-4	R907	A-4	R926	B-4	R953	B-2		

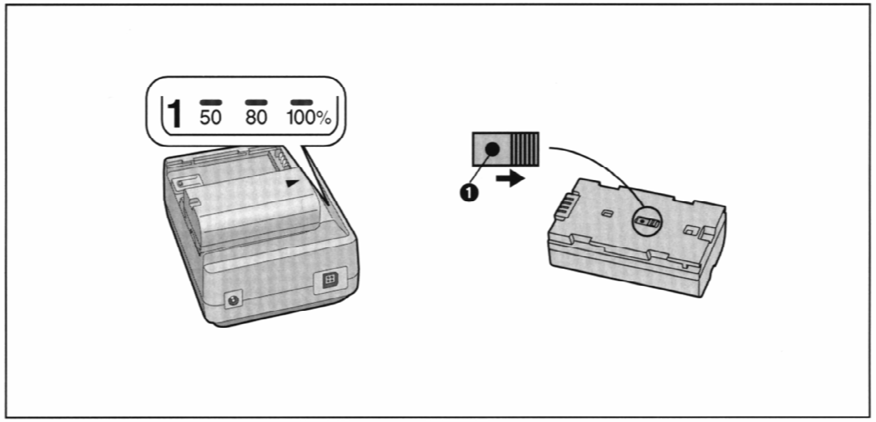
ADDRESS INFORMATION

NOTE:MULTILAYER C.B.A.

THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.


B
A
1
2
3
4
FP905
FP904
FP903
FP902
FP901
IC902
IC903
IC904
IC905
IC906
IC907
IC908
IC909
Q901
Q903
Q904
Q906
QR901
QR906
D901
L901
L902
L903
L904
L905
L907
L908
C902
C903
C904
C905
C906
C909
C911
C912
C922
C923
C924
C925
C926
C927
C928
C929
C933
C934
C935
C938
C901
R901
R902
R903
R905
R907
R908
R909
R910
R911
R912
R913
R914
R921
R922
R924
R925
R926
R927
R928
R929
R930
R931
R932
R933
R934
R935
R944
R945
R953
R954
R955
R956
R957
R958
R959
CL901
CL902
CL903
CL904
CL905
CL906
CL907
CL908
CL909
TL901
MR1
MR2
MR3
MR4
MR5
MR6
MR7
MR8
CKA1
CKA3
CKA4
CKA5
CKA6
CKB2
CKB3
CKB4
CKB5
CKB6
CKB7
CKB8
CKB9
CKB10
CKB11
CKB14
CKB15
CKB16
CKB17
CKC2
CKC3
CKC4
CKC5
CKC12
CKC13
CKC14
CKC17
CKD1
CKD3
CKD4
CKD5
CKE2
CKE6
CKE7
CKE8
CKE9
CKE10
CKE11
CKE12
CKE13
CKE14
CKE15
CKE18
CKE19
CKE20
CKE21
CKE22


PS702
LENS UNIT
CDS/AGC C.B.A.
PS202
PP202
FP602
FP904
FP901
MONITOR LCD PANEL
EVF C.B.A.
• FLUORESCENT LAMP
FP802
EVF LCD PANEL
FP701
LENS FLEX.
FP603
FP601
FP903
FP902
BACK LIGHT UNIT
FP905
SENSOR FLEX.CARD
MONITOR C.B.A.
FP6003
SIDE OPERATION FLEX.UNIT
I/F C.B.A.
PS1003
PP1003
PS1002
SUB C.B.A.
FP1001
BATTERY CATCHER
BATTERY CATCHER FLEX.
BATTERY
DEW SENSOR
FP6002
TOP OPERATION UNIT
TOP OPERATION FLEX. CARD
• MENU
• PHOTO SHOT
• FOCUS/VOL/JOG
• FULL AUTO LED
• FULL AUTO/MANUAL
ZOOM VR
A
B
C
12
13
14
15
16
17
18
19
20
21
22



Charging Time and Maximum Time for Continuous Recording

Battery No.	Charging Time	Max. Continuous Recording Time
CGR-D120 (Supplied)	1 h	1 h 15 min (1 h 5 min)
CGP-D210	1 h 50 min	2 h 10 min (1 h 50 min)
CGR-D220	2 h	2 h 40 min (2 h 20 min)
CGP-D320	3 h 15 min	4 h 40 min (4 h)
CGR-D815	5 h 20 min	9h (7 h 40 min)

(The times shown in the above chart are approximations. The figures in parentheses show the recording time when using the LCD Monitor.)

The times listed above for your information indicate the duration of recording performed at an ambient temperature of 20°C and 60% relative humidity. The charging time may be longer when you charge the Battery at higher or lower temperature.

- During use and charging, the Battery becomes warm. The Movie Camera, too, becomes warm during use.
- When you repeatedly stop and restart recording, the recording time per Battery is shorter than listed above.
- If you do not use the Battery for a long time, please read "Precautions for Storage" **(➜ 154)**.

When the Charge Lamps Flash as Warning

If the ambient temperature is extremely low or extremely high, the Charge Lamps on the AC Adaptor flash. They also flash when some malfunction has occurred in the Battery or the AC Adaptor. For details, read "When the Charge Lamps on the AC Adaptor Flash as Warning" **(➜ 152)**.

Using the Charge Confirmation Marker

You can use this marker to easily distinguish between charged and discharged Batteries.

For example, slide the knob so that the red dot (●) ❶ is visible after the charging is completed.

Inserting the Cassette

1 **Slide the [OPEN/EJECT] Lever ❶ to the right and simultaneously open the Lower Cassette Compartment Cover completely.**
The Cassette Holder slides out.

2 **Insert the cassette with its window in position ❸ shown above.**

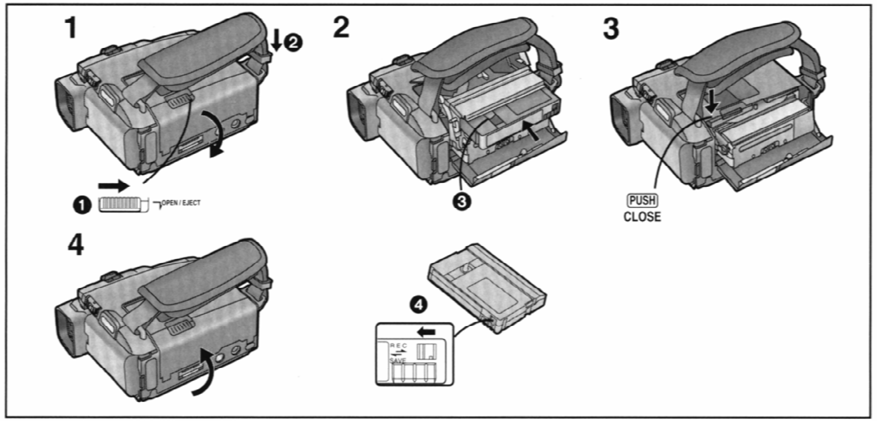
3 **Press on the [PUSH CLOSE] mark to close the Upper Cassette Compartment Cover.**
The Cassette Holder with the cassette slides back inside.
Confirm that the Cassette Holder has retracted completely.

4 **Close the Lower Cassette Compartment Cover.**

- If the Battery is attached or the AC Adaptor connected, you can operate Step 1 even without turning on the Movie Camera.
- When opening or closing the Cassette Compartment, push down the buckle ❷ of the Grip Belt in the direction of the arrow so it does not obstruct the opening and closing of the Cassette Compartment.
- When inserting the cassette, make sure it faces in the right direction and then push it in until it stops.
- When you insert a cassette onto which you have recorded before, use the Camera Search Function **(➜ 58)** to search for the position from which you want to continue recording.
- When you insert a new cassette, rewind the tape to the beginning before starting to record.

Preventing Accidental Erasure of Recordings

Opening the cassette's erasure prevention slider ❹ (sliding it in the direction of the [SAVE] arrow) prevents recording. To record again, close the erasure prevention slider (slide it in the direction of the [REC] arrow).



If the Cassette Holder Does Not Slide Back in
- Press on the [PUSH CLOSE] mark and close the Upper Cassette Compartment Cover securely.
- Turn the Movie Camera off and then on again.
- Check if the Battery is discharged.

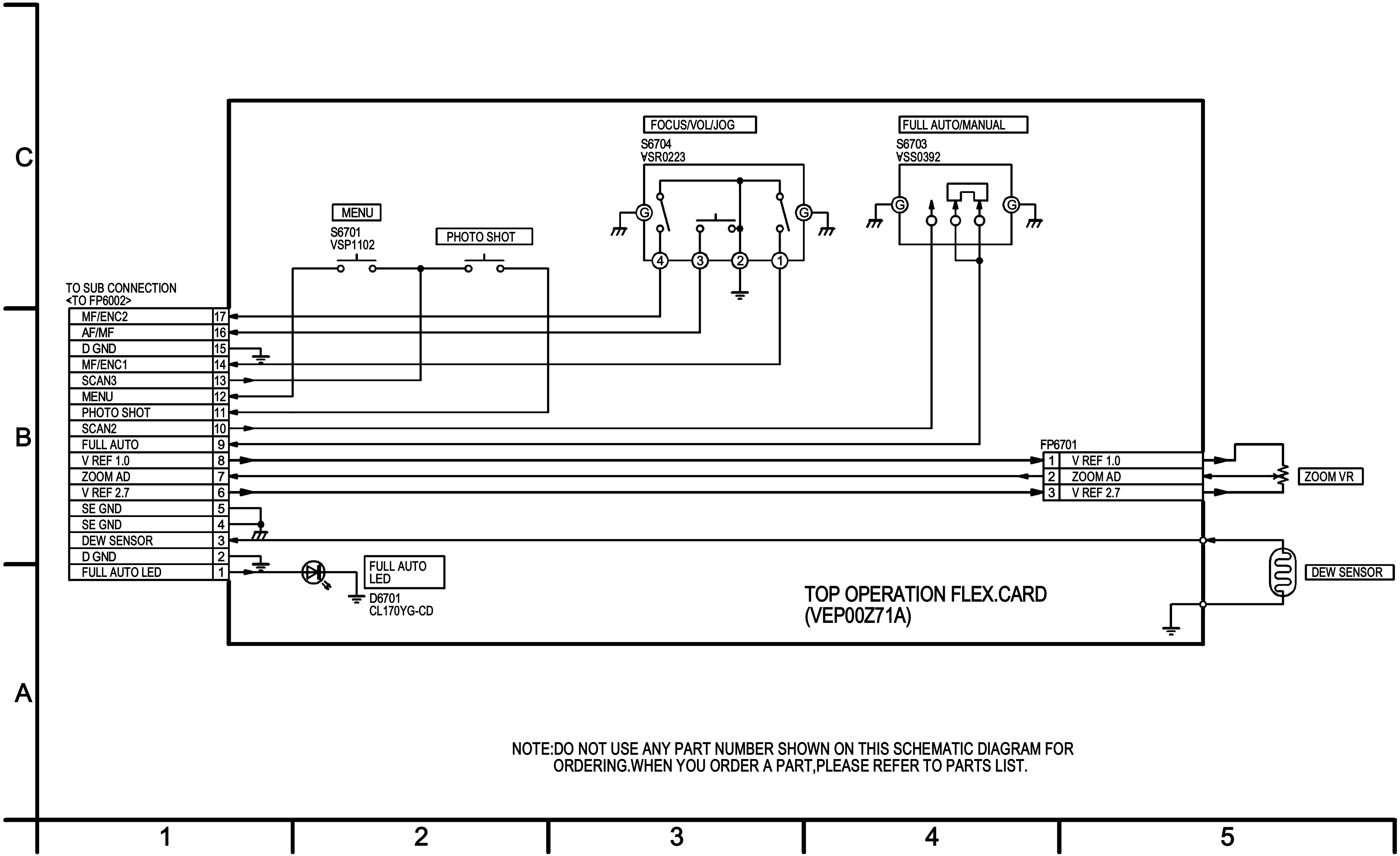
If the Cassette Holder Does Not Slide Out
- Close the Lower Cassette Compartment Cover completely and then open it again.
- Check if the Battery is discharged.

■ LP Mode

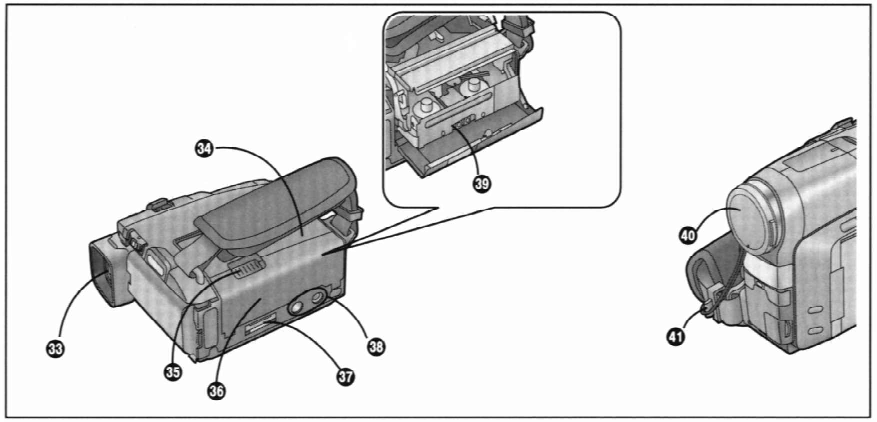
The desired recording speed can be selected with [REC SPEED] on the [CAMERA MENU2] Menu.

If you select the LP Mode, the possible recording time is 1.5 times as long as in the SP Mode.
Recording in the LP mode does not deteriorate the picture quality. However, the playback picture may contain mosaic-like patterns and certain functions may be restricted.

- In the following cases, mosaic-like patterns may appear in the playback picture, or the picture may not be played back correctly:
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on other digital video equipment.
  - When a cassette recorded in the LP Mode on other digital video equipment is played back on this Movie Camera.
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on digital video equipment not featuring the LP Mode.
  - In the Slow Motion or Still Advance Playback Mode. **(➜ 50, 52)**
  - When using the Camera Search Function. **(➜ 58)**
- As the recording track width in the LP Mode is smaller than the head width, recording new sound onto an already recorded cassette (audio dubbing) **(➜ 96)** is not possible.


TO SUB CONNECTION
<TO FP6002>
MF/ENC2 17
AF/MF 16
D GND 15
MF/ENC1 14
SCAN3 13
MENU 12
PHOTO SHOT 11
SCAN2 10
FULL AUTO 9
V REF 1.0 8
ZOOM AD 7
V REF 2.7 6
SE GND 5
SE GND 4
DEW SENSOR 3
D GND 2
FULL AUTO LED 1
MENU
S6701
VSP1102
PHOTO SHOT
FOCUS/VOL/JOG
S6704
VSR0223
FULL AUTO/MANUAL
S6703
VSS0392
G
4
3
2
1
FP6701
1 V REF 1.0
2 ZOOM AD
3 V REF 2.7
ZOOM VR
DEW SENSOR
FULL AUTO LED
D6701
CL170YG-CD
TOP OPERATION FLEX.CARD
(VEP00Z71A)
C
B
A
1
2
3
4
5

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.



㉝ Finder (→ 26, 172)

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the Finder screen. However, this is not a malfunction and does not affect the recorded picture.

㉞ Upper Cassette Compartment Cover (→ 22)

㉟ Cassette Eject Lever [OPEN/EJECT] (→ 22, 56)

㊱ Lower Cassette Compartment Cover (→ 22)

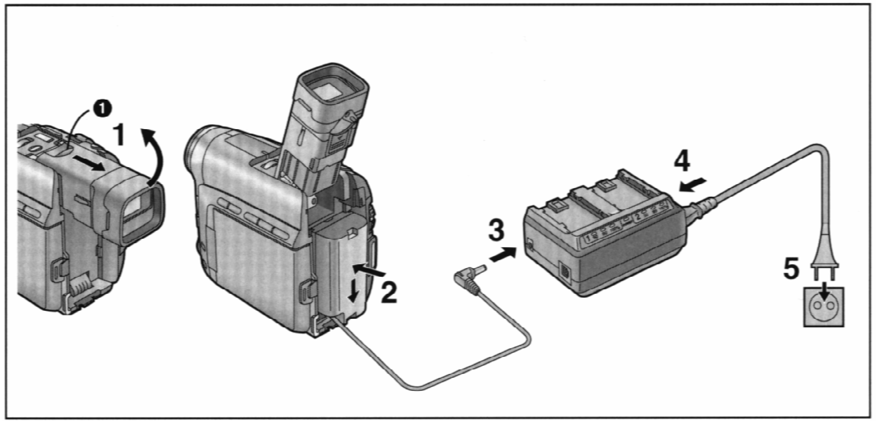
㊲ Multi Terminal (→ 54, 112)

㊳ Tripod Receptacle
To mount the Movie Camera on an optional tripod.

㊴ Cassette Holder (→ 22)

㊵ Lens Cap (→ 28, 56, 84)

㊶ Lens Cap Holder



The 3 Types of Power Supplies

1) AC Adaptor (supplied) to supply power from an AC mains socket
2) Car Adaptor Cord (optional) to supply power from a Cigarette Lighter Socket
3) Battery (supplied) **(→ 18)**

■ Supplying Power from an AC Mains Socket

1 Hook your finger on the protruding edge ❶ of the Finder, slide the Finder backward to its fully extended position and then tilt it upward.
Do not pull on the Eyecup to extend the Finder.

2 Insert the battery-shaped connector of the DC Input Cable as shown above into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.

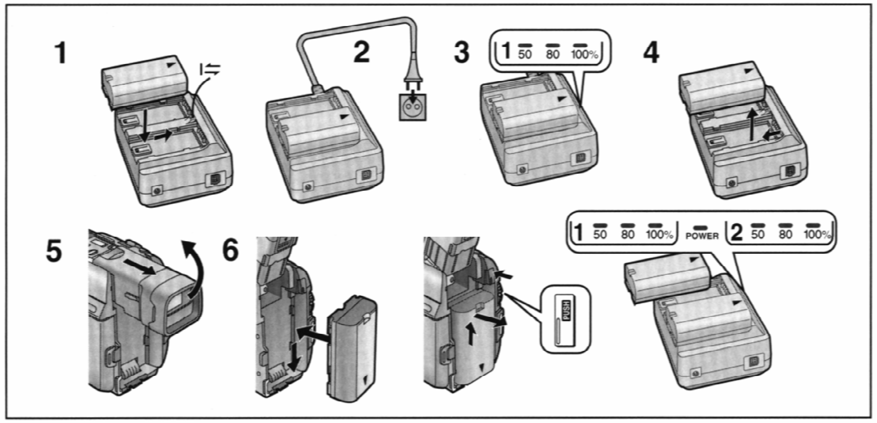
3 Connect the other end of the DC Input Cable to the AC Adaptor.

4 Connect the AC Mains Cable to the AC Adaptor.

5 Connect the other end of the AC Mains Cable to an AC mains socket.
- Before disconnecting the AC Mains Cable, set the [POWER] Switch on the Movie Camera to [OFF].
- If you use the Movie Camera for a long time, it becomes warm. However, this is normal.

■ Supplying Power from the Cigarette Lighter Socket in a Car

The use of the Car Adaptor Cord (VW-KA7E; optional) together with the AC Adaptor makes it possible to supply power to the Movie Camera in a car for recording and playback. It also allows charging the Movie Camera's Battery.
- After use, be sure to disconnect the Car Adaptor Cord from the Cigarette Lighter Socket.
- Be sure to start the car engine before you connect the Car Adaptor Cord, otherwise the fuse may blow.
- Also read the operating instructions of the Car Adaptor Cord.



■ Supplying Power with the Battery

Before use, fully charge the Battery.

1 Place the Battery on the AC Adaptor as shown above and slide it horizontally until it stops.

2 Connect the AC Mains Cable to an AC mains socket.

3 When all three Charge Lamps on the AC Adaptor are lit, charging is finished.
- The Charge Lamps [50%], [80%] and [100%] flash and then remain lit one after another. These lamps indicate the approximate charging condition reached.

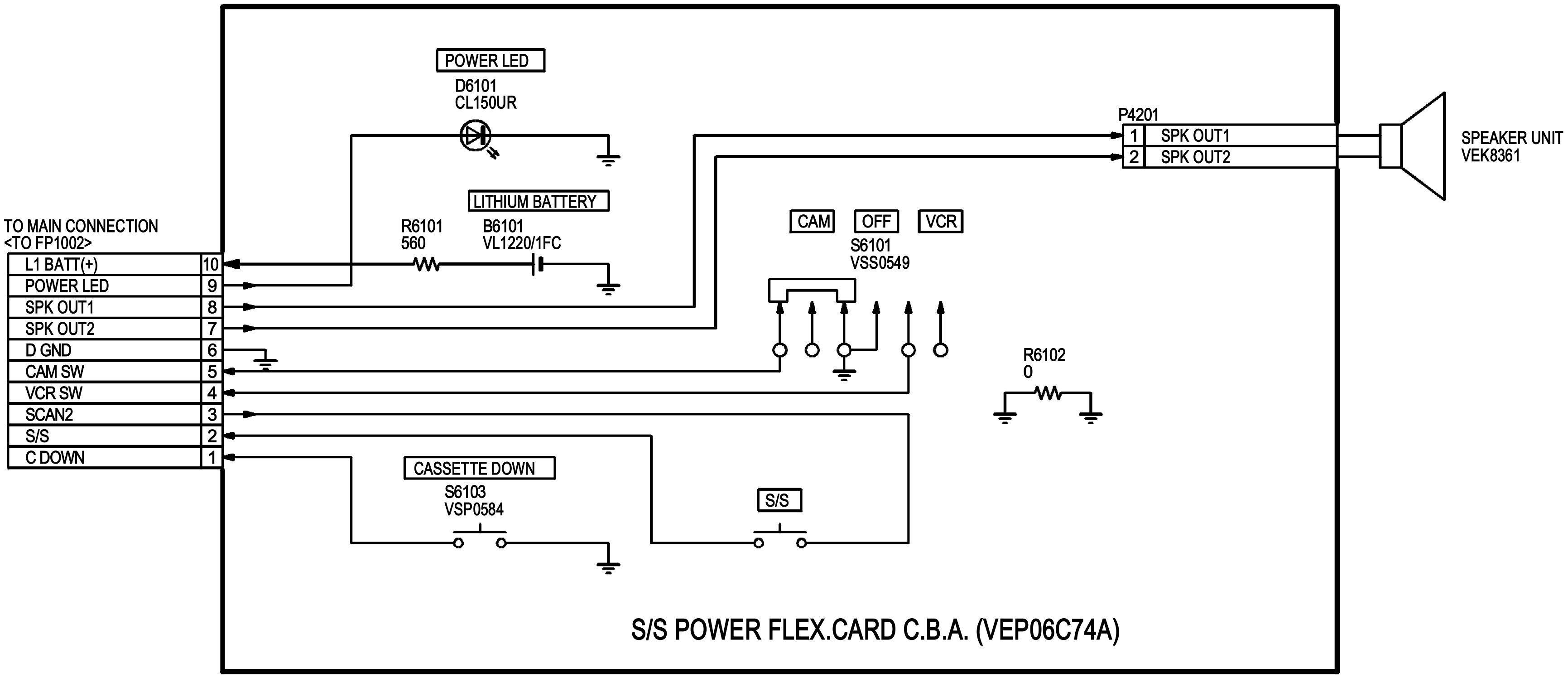
4 Remove the Battery by sliding it in the opposite direction of Step 1 above.
Also disconnect the AC Mains Cable.

5 Slide the Finder backward to its fully extended position and then tilt it upward.

6 Insert the Battery into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.

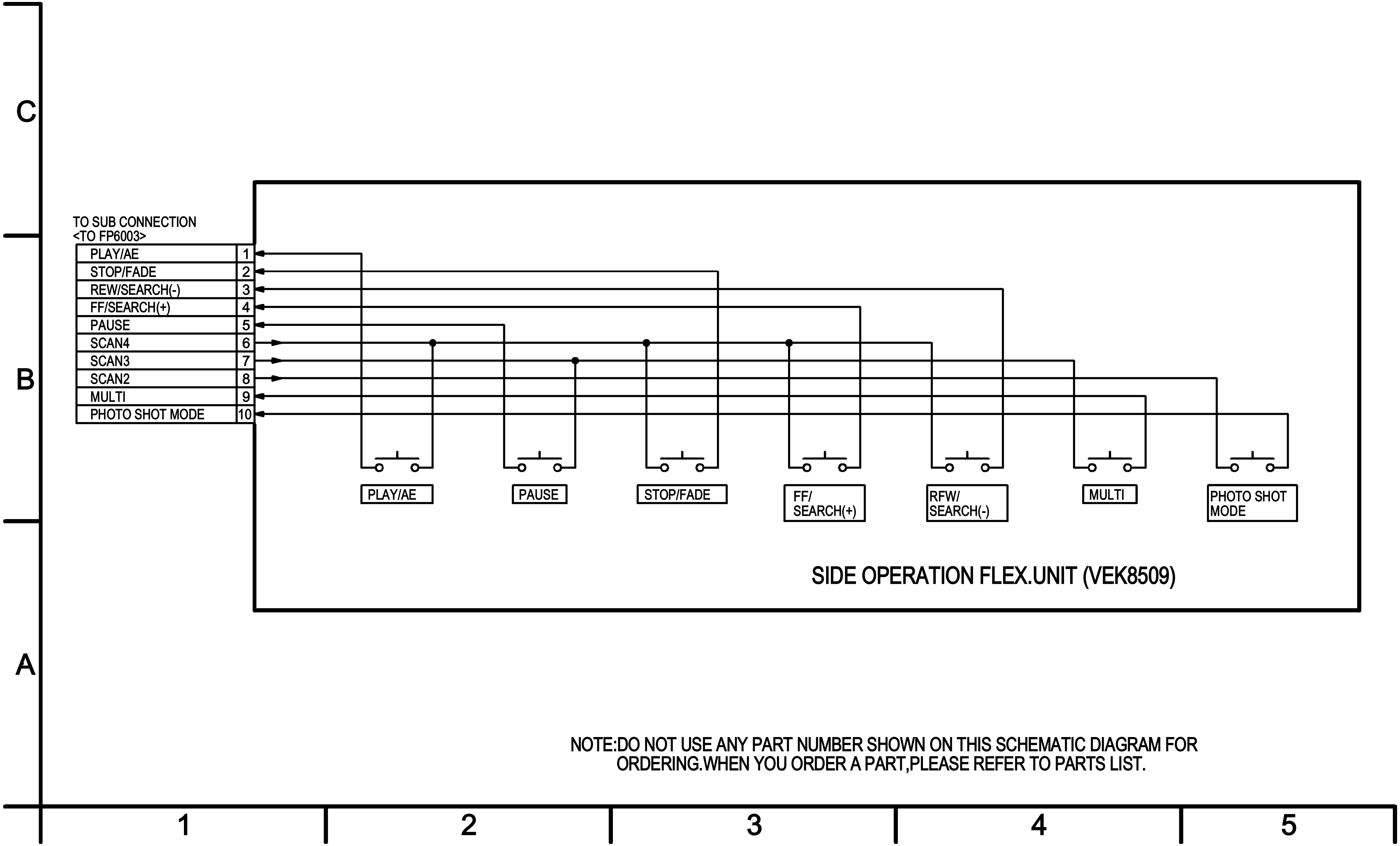
Removing the Battery from the Movie Camera
While pressing the [BATT. EJECT PUSH] Button, slide the Battery upward to remove it.
- Be careful not to drop the Battery by accident.
- Before removing the Battery, set the [POWER] Switch to [OFF].

Charging Two Batteries
If you attach two Batteries to the AC Adaptor, they will be charged one after the other. To charge, follow Steps 1 — 3.
- Charging starts from Battery 1. At this time, the Charge Lamps for Battery 2 show the remaining charge in the Battery 2. (If the remaining charge is less than 50%, no Charge Lamp is lit.)

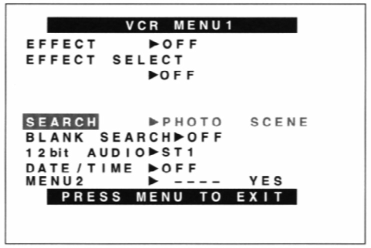

POWER LED
D6101
CL150UR
P4201
1 SPK OUT1
2 SPK OUT2
SPEAKER UNIT
VEK8361
LITHIUM BATTERY
R6101
560
B6101
VL1220/1FC
CAM
OFF
VCR
S6101
VSS0549
TO MAIN CONNECTION
<TO FP1002>
L1 BATT(+) 10
POWER LED 9
SPK OUT1 8
SPK OUT2 7
D GND 6
CAM SW 5
VCR SW 4
SCAN2 3
S/S 2
C DOWN 1
R6102
0
CASSETTE DOWN
S6103
VSP0584
S/S
S/S POWER FLEX.CARD C.B.A. (VEP06C74A)

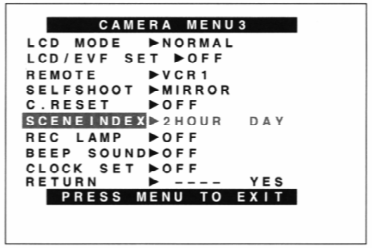
C
B
A
1
2
3
4
5

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


C
B
A
TO SUB CONNECTION
<TO FP6003>
PLAY/AE 1
STOP/FADE 2
REW/SEARCH(-) 3
FF/SEARCH(+) 4
PAUSE 5
SCAN4 6
SCAN3 7
SCAN2 8
MULTI 9
PHOTO SHOT MODE 10
PLAY/AE
PAUSE
STOP/FADE
FF/
SEARCH(+)
RFW/
SEARCH(-)
MULTI
PHOTO SHOT
MODE
SIDE OPERATION FLEX.UNIT (VEK8509)
1
2
3
4
5

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.


VCR MENU1
EFFECT ▶OFF
EFFECT SELECT
▶OFF
SEARCH ▶PHOTO SCENE
BLANK SEARCH▶OFF
12bit AUDIO▶ST1
DATE/TIME ▶OFF
MENU2 ▶ ---- YES
PRESS MENU TO EXIT


CAMERA MENU3
LCD MODE ▶NORMAL
LCD/EVF SET ▶OFF
REMOTE ▶VCR1
SELFSHOOT ▶MIRROR
C.RESET ▶OFF
SCENEINDEX ▶2HOUR DAY
REC LAMP ▶OFF
BEEP SOUND▶OFF
CLOCK SET ▶OFF
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Searching for the Beginning of Recorded Scenes Marked with Index Signal

(Index Search)

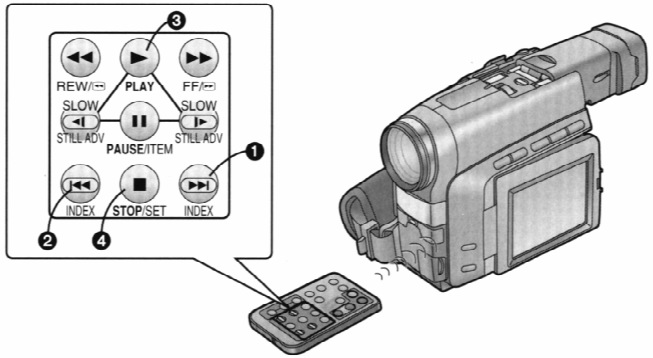
To allow easy searching for desired scenes, this Movie Camera automatically records index signals during recording as follows:

① Photoshot Index Signal
To search for still pictures recorded in the Photoshot Mode **(→ 38)** and to use for automatic printing **(→ 122)**.
A photoshot index signal is automatically recorded every time you record a still picture in the Photoshot Mode.
- However, in the Continuous Photoshot Mode **(→ 38)**, no photoshot index signals are recorded.

② Scene Index Signal
To search for the beginning of recorded scenes.
A scene index signal is automatically recorded in the following cases:
- When you start recording after inserting a cassette.
- According to the setting of [SCENEINDEX] on the [CAMERA MENU3] Menu:

[2HOUR]: An index signal is recorded when recording is restarted after a lapse of more than 2 hours.
[DAY]: An index signal is recorded when recording is restarted after the date has changed since the last recording.

(While an index signal is being recorded, the [INDEX] Indication flashes for a few seconds.)


③
REW/
PLAY
FF/
SLOW
STILL ADV
SLOW
STILL ADV
PAUSE/ITEM
①
INDEX
STOP/SET
INDEX
②
④

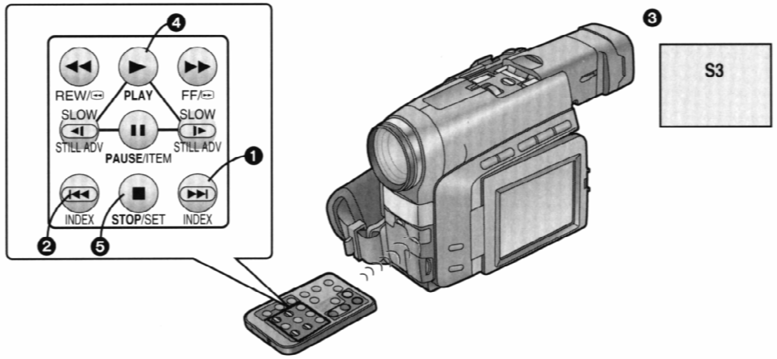
Searching for Photoshot Pictures
(Photoshot Index Search)

- Set the [POWER] Switch to [VCR].
- Set [SEARCH] on the [VCR MENU1] Menu to [PHOTO].

Photoshot Index Search in Forward Direction
Press the Index Button [▶▶|] ① on the Remote Controller.

Photoshot Index Search in Reverse Direction
Press the Index Button [|◀◀] ② on the Remote Controller.

- At every press of the corresponding button, the tape is fast-forwarded or rewound to the next still picture recorded in the Photoshot Mode.
After reaching the next still picture, the still picture is played back continually, however the sound only for approximately 4 seconds. (If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.)
- The Photoshot Index Search may not work correctly for still pictures recorded near the beginning of the tape.
- As no photoshot index signals are recorded for still pictures recorded in the Continuous Photoshot Mode **(→ 38)**, the Photoshot Index Search Function cannot be used to search for these still pictures.
- If you keep the [|◀◀] or [▶▶|] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back all still pictures recorded in the Photoshot Mode on the cassette one after another for a few seconds each.
(To cancel the Intro Search Function, press the Play Button [▶] ③ or the Stop Button [■] ④.)


④
REW/
PLAY
FF/
SLOW
STILL ADV
SLOW
STILL ADV
PAUSE/ITEM
①
INDEX
STOP/SET
INDEX
②
⑤
③
S3

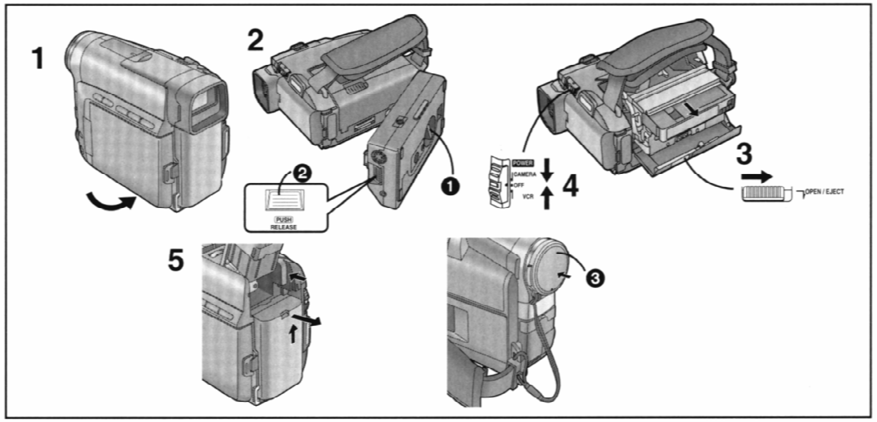
Searching for the Beginning of Recorded Scenes (Scene Index Search)

- Set the [POWER] Switch to [VCR].
- Set [SEARCH] on the [VCR MENU1] Menu to [SCENE].

Scene Index Search in Forward Direction
Press the Index Button [▶▶|] ① on the Remote Controller.

Scene Index Search in Reverse Direction
Press the Index Button [|◀◀] ② on the Remote Controller.

- When you briefly press the corresponding button once, the [S1] Indication appears and the search for the next scene marked with an index signal starts. After the Scene Index Search has started, every time you press the button, the indication changes successively from [S2] to [S9], and the beginning of the scene corresponding to the selected number is located. ③ After reaching the desired scene, playback starts automatically. (At a time, Scene Index Search in forward or reverse direction is possible up to the ninth scene marked with index signal from the present tape position.)
- If the interval between two scene index signals is less than 1 minute, the Scene Index Search may not work correctly.
- The Scene Index Search may not work correctly for scenes recorded near the beginning of the tape.
- If you keep the [|◀◀] or [▶▶|] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back the beginning of all scenes marked with an index signal on the cassette one after another for a few seconds each.
(To cancel the Intro Search Function, press the Play Button [▶] ④ or the Stop Button [■] ⑤.)



After Use

1 Close the LCD Monitor.

2 Loosen the locking screw ❶ and remove the Output Terminal Box [AV ONE TOUCH STATION] while pressing the [PUSH RELEASE] Button ❷.
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

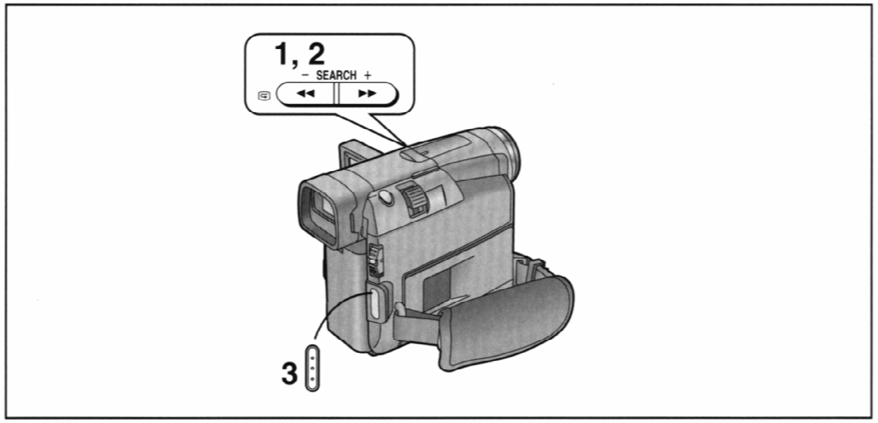
3 Take out the cassette. (➜ 22)

4 Set the [POWER] Switch to [OFF].
It is not necessary to press the centre button in order to slide the switch to [OFF].

5 Remove the Battery and retract the Finder.
(➜ 18)

Attaching the Lens Cap

After use, attach the supplied Lens Cap ❸ to the Lens to protect it.



Viewing Recorded Scenes During Recording Pause (Camera Search)

You can view recorded scenes when the Movie Camera is in the Recording Pause Mode.
The Camera Search Function is convenient to search for a scene from which you want to start recording a new scene with smooth scene-to-scene transition.

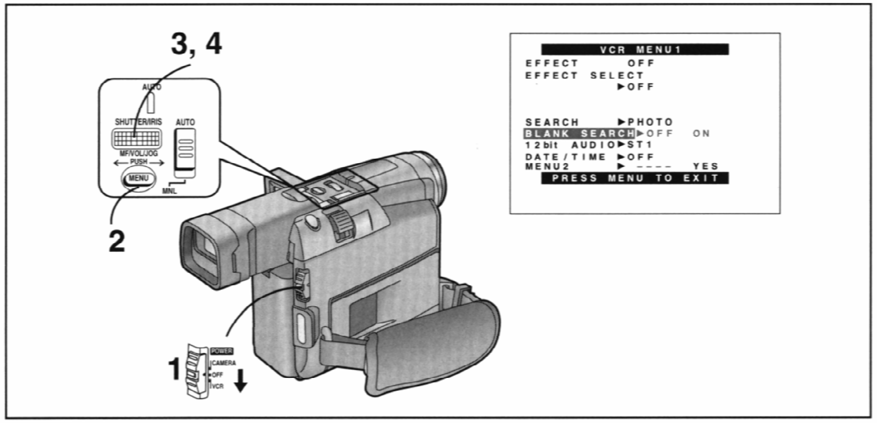
1 Keep the Reverse Search Button [– SEARCH] or the Forward Search Button [SEARCH +] pressed for more than 1 second.
Pressing the [– SEARCH] Button plays back the picture in reverse direction.
Pressing the [SEARCH +] Button plays back the picture in forward direction.

Starting to Record from the Desired Position

2 Release the pressed Search Button.
The Movie Camera is in the Recording Pause Mode.

3 Press the Start/Stop Button to start recording.
The Movie Camera starts recording a new scene with smooth scene-to-scene transition.

- In the Camera Search Mode, the picture may contain mosaic-like patterns. However, this is a phenomenon particular to digital video and completely normal.
- If the Recording Speed Mode (SP/LP) of the previous and the new recording are different, the playback picture may be distorted.



```
      VCR MENU1
EFFECT        OFF
EFFECT SELECT
             ▶OFF


SEARCH       ▶PHOTO
BLANK SEARCH ▶OFF   ON
12bit AUDIO  ▶ST1
DATE/TIME    ▶OFF
MENU2        ▶ ----  YES
  PRESS MENU TO EXIT
```

Searching for the End of the Recorded Part on a Cassette
(Blank Search)

With the Blank Search Function, you can quickly locate the end of the recorded part on a cassette (or a blank part between recordings).

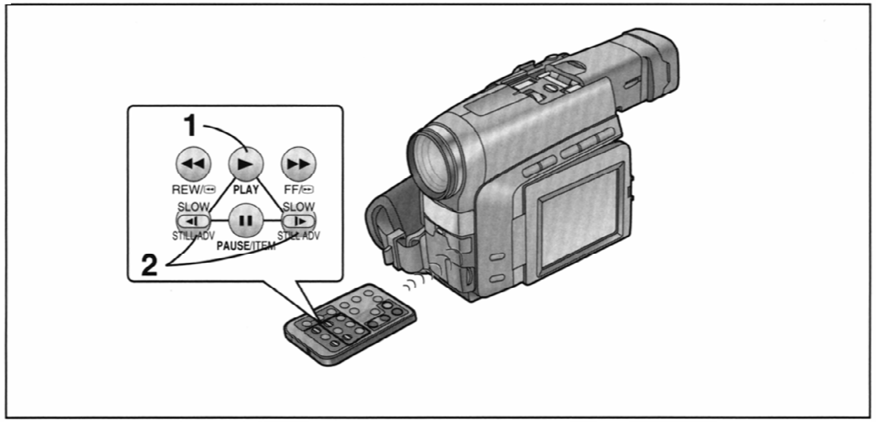
1 Set the [POWER] Switch to [VCR].
While pressing the centre button, slide the switch to [VCR].

2 Press the [MENU] Button.
The [VCR MENU1] Menu appears.

3 Turn the [PUSH] Dial to select [BLANK SEARCH].

4 Press the [PUSH] Dial to select [ON].
Approximately 1 second before the end of the last recorded scene, the Movie Camera switches over to the Still Playback Mode.

- If there is no blank part on a cassette, the Movie Camera stops at the end of the tape.
- If you set the [POWER] Switch to [CAMERA] and then start recording after the Blank Search has finished, the new scene will be joined to the end of the last recorded scene with a smooth transition.
- To cancel the Blank Search before it finishes, press the [■] Button.



Playing Back in Slow Motion

(Slow Motion Playback)

1 Press the Play Button [▶].

2 Press the Slow Motion/Still Advance Button [◀I] or [I▶] on the Remote Controller.

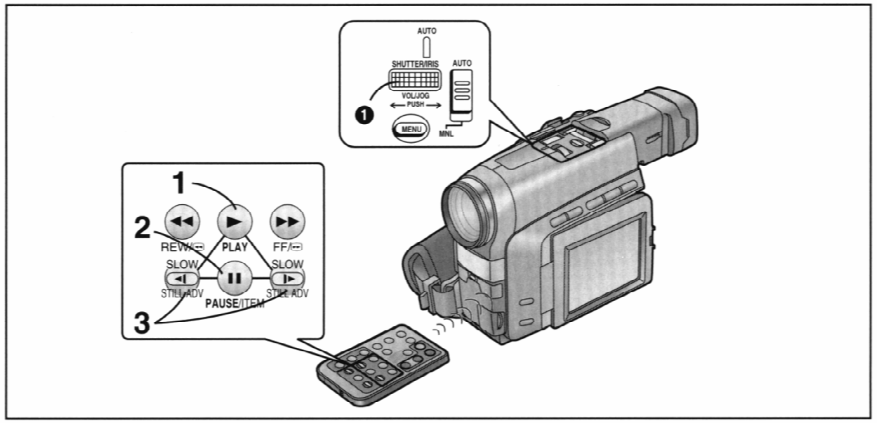
Pressing the [◀I] Button starts slow motion playback in reverse direction, and pressing the [I▶] Button starts slow motion playback in forward direction.

Scenes recorded in the SP Mode are played back at approximately 1/5th of the normal speed.
Scenes recorded in the LP Mode are played back at approximately 1/3rd of the normal speed.

- During slow motion playback in reverse direction, the Time Code Indication may not be accurate.

Resuming Normal Playback

Press the Play Button [▶].
Playback continues with normal speed.



Playing Back Still Pictures and Advancing Them One by One

(Still Playback/Still Advance Playback)

You can freeze the action during playback and advance the still pictures one by one.

1 Press the Play Button [▶].

2 Press the Pause Button [❚❚].

The playback picture stops in the Still Playback Mode.

3 Press the Slow Motion/Still Advance Button [◀I] or [I▶] on the Remote Controller.

Pressing the [◀I] Button advances the still picture frame by frame in reverse direction. Pressing the [I▶] Button advances the still picture frame by frame in forward direction.

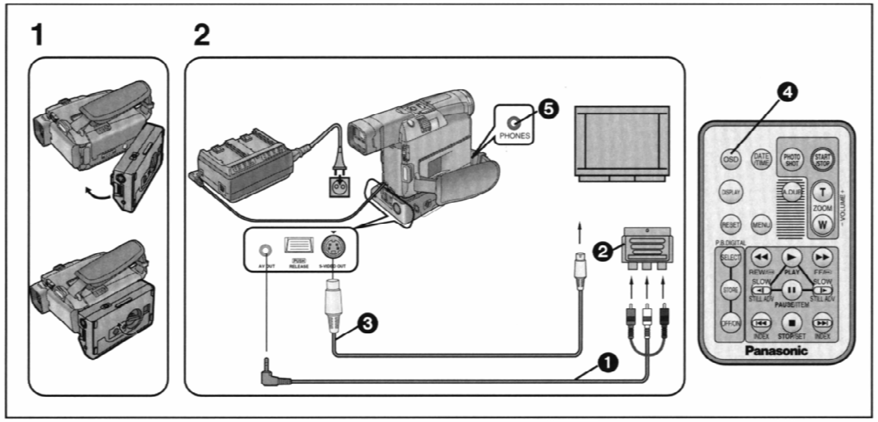
- Each press of the [◀I] Button advances to the next still picture in reverse direction. Each press of the [I▶] Button advances to the next still picture in forward direction. Keeping either button pressed continuously advances the still picture frame by frame until you release the button.
- If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.
- During Still Advance Playback, the Time Code Indication may not be accurate.

Resuming Normal Playback

Press the Play Button [▶].
Playback continues with normal speed.

Using the Jog Dial (Jog Playback)

By turning the Jog Dial ([PUSH] Dial) ❶ on the Movie Camera in the Still Playback Mode, you can advance the still pictures one by one in forward or reverse direction.



Playing Back on a TV

(With the Output Terminal Box [AV ONE TOUCH STATION] Attached)

Attaching the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera makes it possible to play back recorded scenes on a TV.

1 Attach the Output Terminal Box [AV ONE TOUCH STATION]. (→ 112)

2 Connect the [AV OUT] Socket to the Video and Audio Input Sockets on the TV.

Use the AV Cable ❶ and 21-pin Adaptor ❷ to connect to the TV. If your TV is equipped with an S-Video Socket, also connect the S-Video Cable ❸.

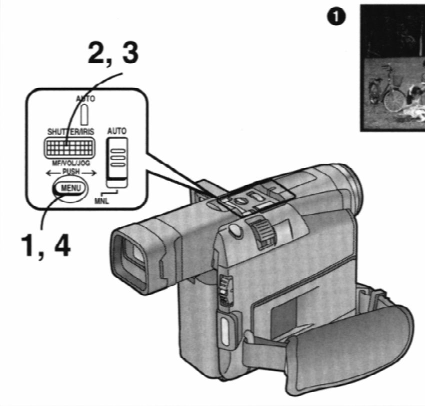
- Before connecting, turn off both the Movie Camera and the TV.
- If a cassette recorded with copyright protection signal is played back, the screen becomes black. However, scenes recorded with this Movie Camera do not contain a copyright protection signal.

Making the Indications Appear on the TV Screen

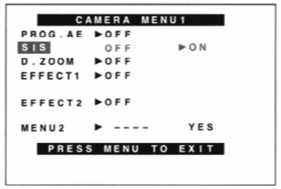
Press the [OSD] Button ❹ on the Remote Controller. The On-Screen Indications also appear on the TV screen.

Listening to the Playback Sound via Headphones

If you want to use headphones to listen to the playback sound, connect them to the [PHONES] Socket ❺ on the Output Terminal Box [AV ONE TOUCH STATION]. In this case, no sound is reproduced from the Movie Camera's built-in speaker, and the volume of the playback sound cannot be adjusted.



❶



```
CAMERA MENU1
PROG.AE  ▶OFF
SIS       OFF        ▶ON
D.ZOOM   ▶OFF
EFFECT1  ▶OFF

EFFECT2  ▶OFF

MENU2    ▶ ----      YES
PRESS MENU TO EXIT
```

Recording with Minimised Camera Shake (Super Image Stabilizer)

In recording situations where shaking of the Movie Camera is likely to happen, for example when you have zoomed in on a distant subject or when you record while walking, you can use this function to stabilize the image.

- In case of very strong camera shake, it may not be possible to stabilize the picture.

1 Press the [MENU] Button.
The [CAMERA MENU1] appears.

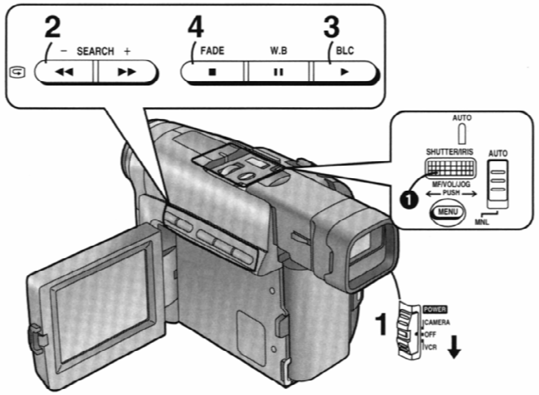
2 Turn the [PUSH] Dial to select [SIS].

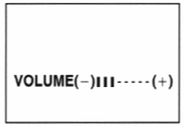
3 Press the [PUSH] Dial to select [ON].

4 Press the [MENU] Button to exit the Menu.
The [ ] Indication ❶ appears.

- In a dimly lit place, the Super Image Stabilizer Function may not work. In this case, the [ ] Indication flashes.
- Under fluorescent lamps, the picture brightness may fluctuate and the colours may be unnatural.
- After-image distortion may occur.
- When you use a tripod, we recommend to turn the Super Image Stabilizer Function off.

Cancelling the Super Image Stabilizer Function
Set [SIS] on the [CAMERA MENU1] Menu to [OFF].



❷


VOLUME(−)ııı-----(+)

Viewing the Just Recorded Scenes on the Movie Camera (Playback)

You can play back recorded scenes right after recording.

1 Set the [POWER] Switch to [VCR].
- While pressing the centre button, slide the switch to [VCR].

2 Press the Rewind Button [◀◀] to rewind the tape.
- Rewind the tape to the point where the recording started.
- If the tape reaches the beginning, rewinding automatically stops.

3 Press the Play Button [▶] to start playback.
- If a cassette recorded with copyright protection signal is played back, the screen becomes black.

4 To stop playback:
Press the Stop Button [■].

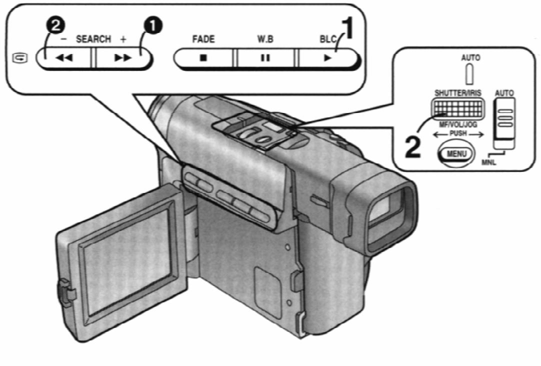
■ Adjusting the Sound Volume

Keep the [PUSH] Dial ❶ pressed until the [VOLUME] Indication ❷ appears. Then, turn the [PUSH] Dial to adjust the volume. After adjusting, press the [PUSH] Dial to make the [VOLUME] Indication disappear.
To adjust the volume with the Remote Controller, press the [T] or [W] Button to make the [VOLUME] Indication appear. A few seconds after finishing the adjustment, the [VOLUME] Indication disappears.

■ Repeat Playback

- If you keep the Playback Button [▶] pressed for more than 5 seconds, the Movie Camera switches over to the Repeat Playback Mode and the [R ▷] Indication appears. To cancel the Repeat Playback Mode, set the [POWER] Switch to [OFF].

Making the Date/Time Indication Appear
This Movie Camera automatically records the date and time, however not directly in the picture but as part of the sub code **(➜ 158)**.
To make the Date/Time Indication appear, set [DATE/TIME] on the [VCR MENU1] Menu to the desired setting.
It is also possible to make the Date/Time Indication appear and change it by repeatedly pressing the [DATE/TIME] Button on the Remote Controller.



Ⓐ

Ⓑ

Ⓒ

Searching for a Scene That You Want to Play Back

Cue Playback Ⓐ
Keep the Cue Button [▶▶] ❶ pressed during playback.

Review Playback Ⓑ
Keep the Review Button [◀◀] ❷ pressed during playback.

Search Lock Function
For longer Cue or Review Playback, press the Cue Button [▶▶] or the Review Button [◀◀] only briefly. As this locks the search function, you do not need to keep the button pressed for a long time.

- To resume normal playback, press the Play Button [▶].
- In Cue and Review Playback, pictures with fast-moving subjects may contain mosaic-like patterns.

Hyper Check Function
- If you press the Fast-forward Button [▶▶] during fast-forwarding of the tape or the Rewind Button [◀◀] during rewinding of the tape, Cue Playback or Review Playback continues for as long as you keep the Button pressed.
- At the beginning and end of Cue Playback or Review Playback, some momentary picture distortion may occur.

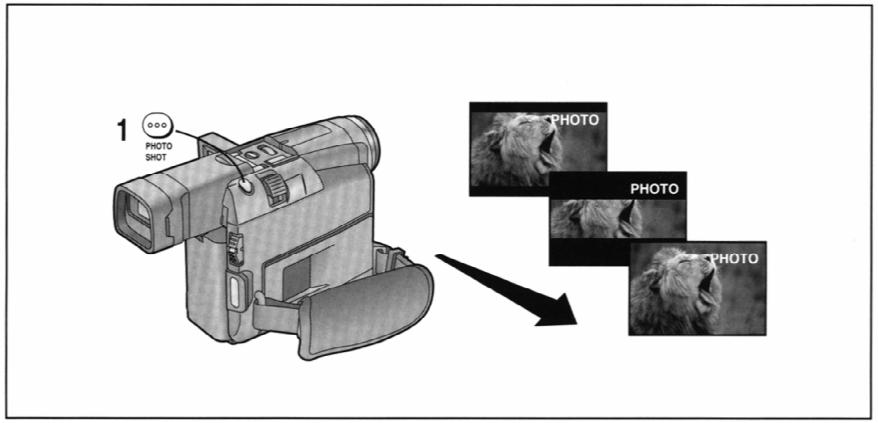
Variable Speed Search Function Ⓒ
It is possible to change the speed of Cue Playback or Review Playback.

1 Press the Play Button [▶] during playback.

2 Turn the [PUSH] Dial to select the desired search speed.

The Variable Speed Search function offers a choice of five playback speeds (1×, 2×, 5×, 10×, 20×) both in forward direction and reverse direction.

Returning to Normal Playback
Press the Play Button [▶]. Playback continues at normal speed.
- During Variable Speed Search (except at 1× speed in forward direction), mosaic-like patterns appear in the picture.
- When using the Variable Speed Search Function, the sound is muted.



Using the Movie Camera as a Digital Still Camera (Photoshot)

With this function, you can record still pictures with sound for approximately 7 seconds each.

1 Press the [PHOTO SHOT] Button in the Recording Pause Mode.

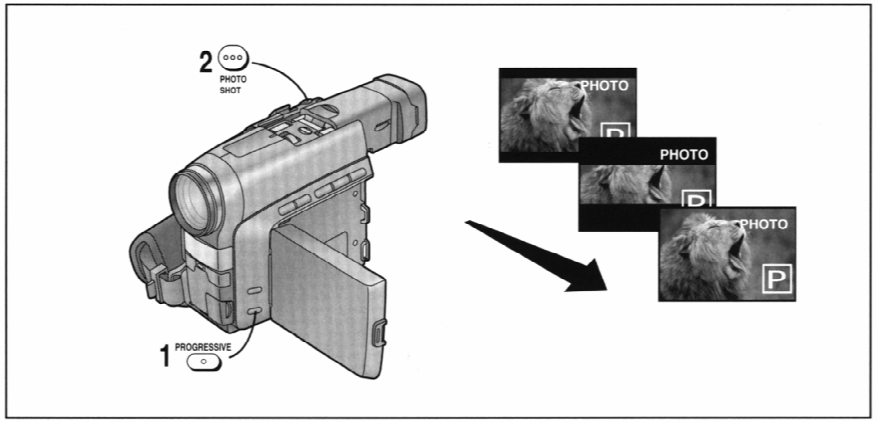
The Movie Camera records a still picture for approximately 7 seconds and then switches back to the Recording Pause Mode.

- It is not possible to use the Photoshot Function during a normal recording.
- If you set [SHTR EFFECT] on the [CAMERA MENU2] Menu to [ON], the screen blinks briefly and a simulated shutter click sound can be heard when you press the [PHOTO SHOT] Button. This audiovisual effect is also recorded.
- With the still pictures that you have recorded in the Photoshot Mode, you can do the following:
  - Index Search **(➜ 62, 64)**
    (However, searching for the picture(s) recorded at the beginning of the tape may not be possible.)
  - Automatic printing **(➜ 122)**
- The visual shutter effect and click sound may occur with slight delay after recording of the still picture has started.
- The picture quality deteriorates slightly.

Continuous Photoshot

If you set [SHTR EFFECT] on the [CAMERA MENU2] Menu to [ON] and keep the [PHOTO SHOT] Button pressed in the Recording Pause Mode, the Movie Camera automatically records still pictures successively at intervals of approximately 0.7 second until you release the button.

- One more still picture may be recorded after you release the [PHOTO SHOT] Button.
- As the still pictures recorded in the Continuous Photoshot Mode are not marked with photoshot index signals, they cannot be located by using the Photoshot Index Search Function and printed with the Auto Print Function.



Using the Movie Camera as a Digital Still Camera (Continued)

■ Progressive Photoshot (➜ 168)

The Progressive Photoshot Function lets you record still pictures with higher resolution than the normal Photoshot Function. This is ideal for example for pictures that you want to print with a Digital Video Printer or import into a computer.

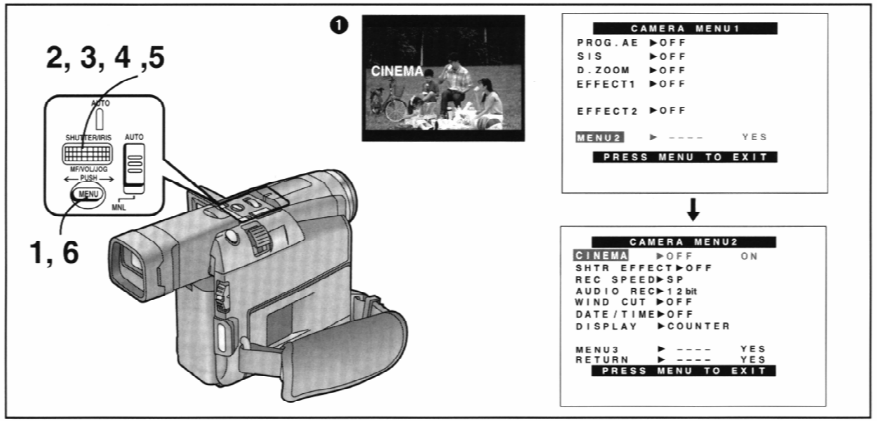
1 Press the [PROGRESSIVE] Button in the Recording Pause Mode.

The [P] Indication appears.

2 Press the [PHOTO SHOT] Button.

The Movie Camera records a still picture for approximately 7 seconds and then switches back to the Recording Pause Mode.

- When you press the [PROGRESSIVE] Button, the [P] Indication appears. When you press it again, this indication disappears and the Movie Camera is again in the normal Photoshot Mode.
- When you press the [PHOTO SHOT] Button, you can hear a click sound, but it is not recorded. This is not a malfunction.
  It is not possible to activate the Progressive Photoshot Mode during recording: you must first pause the recording.
- When the Movie Camera is in the Progressive Photoshot Mode, you cannot select any setting for the items [D.ZOOM] and [EFFECT1] on the [CAMERA MENU1] Menu. Pressing the [PROGRESSIVE] Button to activate the Progressive Photoshot Function automatically cancels the previously selected Digital Effect Function and the Digital Zoom Function.
- In the Progressive Photoshot Mode, you cannot use the Continuous Photoshot Function.
- When you record a still picture in the Progressive Photoshot Mode while [PROG.AE] on the [CAMERA MENU1] Menu is set to Sports Mode [🏃] or Portrait Mode [👥], the brightness may fluctuate. Also, the range of selectable shutter speeds is limited to 1/50 s to 1/500 s. Therefore, we recommend that you use the Movie Camera with the Mode Selector Switch set to [AUTO].



```
CAMERA MENU1
PROG.AE   ▶OFF
SIS       ▶OFF
D.ZOOM    ▶OFF
EFFECT1   ▶OFF

EFFECT2   ▶OFF

MENU2     ▶ ----      YES
PRESS MENU TO EXIT
```

```
CAMERA MENU2
CINEMA      ▶OFF      ON
SHTR EFFECT▶OFF
REC SPEED▶SP
AUDIO REC▶12bit
WIND CUT  ▶OFF
DATE/TIME▶OFF
DISPLAY   ▶COUNTER

MENU3       ▶ ----    YES
RETURN      ▶ ----    YES
PRESS MENU TO EXIT
```

Recording in the Cinema Mode

(Cinema Mode)

This mode lets you record in the cinema-like wide-screen format.

1 Press the [MENU] Button.

The [CAMERA MENU1] Menu appears.

2 Turn the [PUSH] Dial to select [MENU2].

3 Press the [PUSH] Dial to select [YES].

The [CAMERA MENU2] Menu appears.

4 Turn the [PUSH] Dial to select [CINEMA].

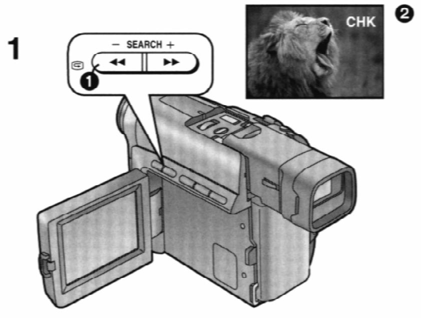
5 Press the [PUSH] Dial to select [ON].

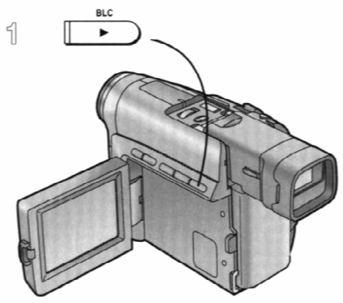
Black bars appear at the top and bottom on the screen. ❶

6 Press the [MENU] Button to exit the Menu.

Cancelling the Cinema Mode

Set [CINEMA] on the [CAMERA MENU2] Menu to [OFF].





Checking If the Picture Is Recorded
(Recording Check)

To play back the final few seconds of the last recorded scene in the Recording Pause Mode.

1 Press the Recording Check Button [⊆] ❶ briefly in the Recording Pause Mode.

The [CHK] Indication ❷ appears.
After checking, the Movie Camera returns to the Recording Pause Mode.

- For Recording Check, the Movie Camera must be in the same mode (SP or LP) as used for recording, otherwise the playback picture is distorted.

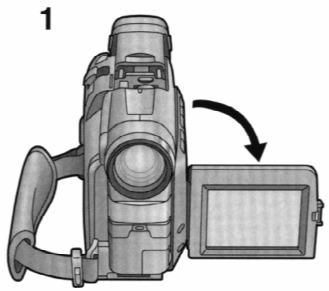
Recording Backlit Scenes
(Backlight Compensation)

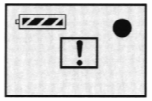
To prevent the backlit subject from being recorded very dark.
(Backlight means that the light falls on the subject from behind, i.e. the subject is between the light source and the Movie Camera.)

1 Keep the Backlight Button [BLC] pressed.

The backlight is being compensated as long as you keep the Button pressed, and the subject is recorded more brightly. (The picture brightens up as a whole.)

Returning to Normal Recording
Release the Backlight Button [BLC].





Recording Yourself
(Recording with the LCD Monitor Facing Forward)

This makes it possible to record yourself while viewing the picture on the LCD Monitor or to show the persons in front of the Movie Camera the picture being recorded.

1 Open the LCD Monitor and turn it so that it faces forward (lens side).

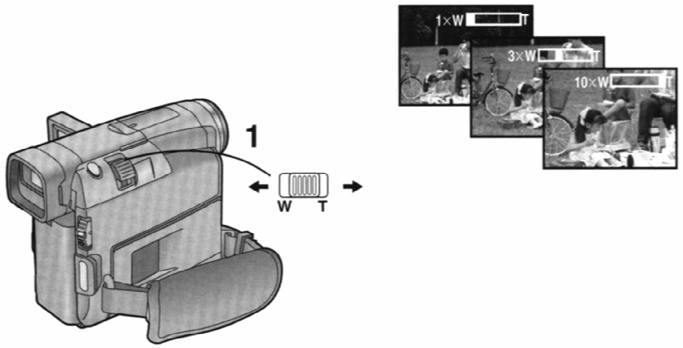
Opening the LCD Monitor automatically turns off the Finder. However, when you turn the LCD Monitor forward, the picture also appears in the Finder.
This lets you aim the Movie Camera and view the picture in the Finder, while the persons in front of the Movie Camera can check the picture on the LCD Monitor during recording.

Mirror Mode
If you set [SELFSHOOT] on the [CAMERA MENU3] Menu to [MIRROR], the picture displayed on the LCD Monitor is reversed liked a mirror-image. When recording yourself with the LCD Monitor facing forward, the picture as it is being recorded might look unusual. We usually look at ourselves in the mirror and, although the image we see there is actually reversed right and left, it feels more natural because we are used to it. This Movie Camera features the Mirror Mode which displays the picture as a mirror-image.
However, even if you have selected the Mirror Mode, the picture is recorded in the normal way.

- In the Mirror Mode, only the following indications are displayed.

●:	Recording
●❚❚:	Recording Pause
▰▰▰:	Remaining Battery Power

When the General Warning/Alarm Indication [!] appears, turn the LCD Monitor backward so that you can confirm the actual Warning/Alarm Indication.



Enlarging Your Subject or Widening the Recording Angle
(Zooming In/Out)

Recording close-ups of your subjects and recording wide-angle shots add special effects to your videos.

1 To record a wider view (Zooming-out): Push the [W/T] Zoom Lever toward [W].
To enlarge your subject (Zooming-in): Push the [W/T] Zoom Lever toward [T].

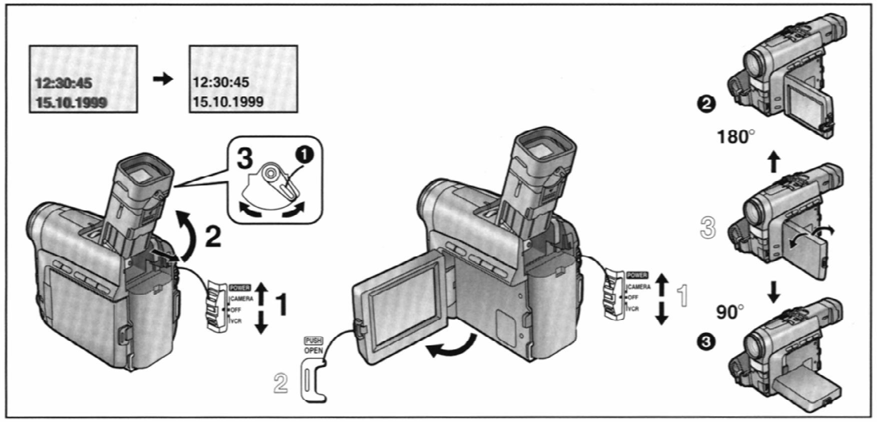
- The Zoom Magnification Indication appears for a few seconds.
- The farther you push the [W/T] Zoom Lever toward [W] or [T], the faster the zooming speed becomes.
- During recording, the zooming speed is lower than during recording pause.

Enlarging Your Subjects Even More (Digital Zooming)
If you set [D.ZOOM] on the [CAMERA MENU1] Menu to [20×] or [100×], it is possible to further enlarge the subject.
The [D.ZOOM] Indication appears.

- **20×**: Digital zooming up to 20×.
- **100×**: Digital zooming up to 100×.
- Up to 10×, the Zoom Magnification is done optically.
- The higher the Digital Zoom Magnification is, the lower is the picture quality.
- For the item [D.ZOOM] on the [CAMERA MENU1] Menu, you can select either [20×] or [100×] as the maximum zoom magnification.
- When the Progressive Photoshot Mode (**→ 40**) is activated (the [P] Indication is displayed), it is not possible to use the Digital Zoom Function.

Recording Extra Close-up Shots of Small Subjects (Macro Close-up Function)
When the zoom magnification is 1×, the Movie Camera can focus on subjects down to a distance of approximately 35 mm between lens and subject. This allows recording very small subjects such as insects.

- When you have zoomed to the tele setting, precise focusing is only possible on subjects no closer than 1.2 metres.



Using the Finder

Before using the Finder, adjust it to your eyesight so that the indications in the Finder are clear and easy to read.

1 Set the [POWER] Switch to [CAMERA] or [VCR].
While pressing the centre button, slide the switch to [CAMERA] or [VCR].

2 Slide the Finder backward completely and then tilt it upward.
Do not pull on the Eyecup to extend the Finder.
The Finder can be tilted upward by up to approximately 75°.

3 Adjust by turning the Eyepiece Corrector Lever ❶.

Note:
Do not leave the Finder exposed to direct sunlight, as its magnifying glass could bundle the light beams and seriously heat-damage the Finder.

Using the LCD Monitor

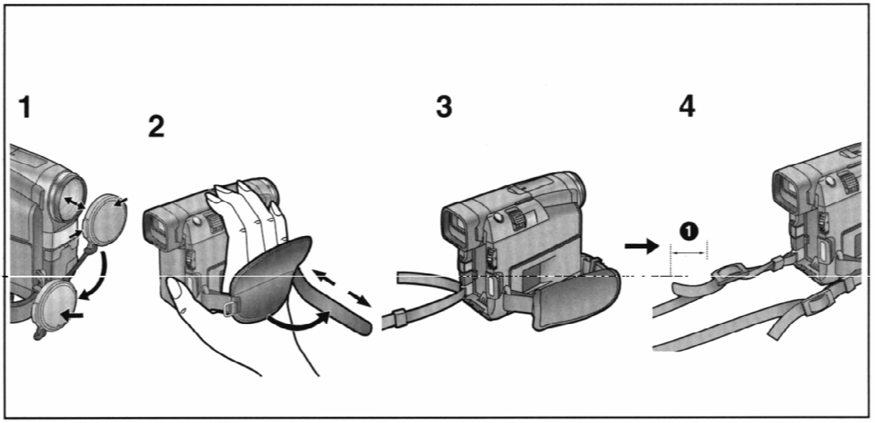
You can also record while viewing the picture on the opened LCD Monitor.

1 Set the [POWER] Switch to [CAMERA] or [VCR].
While pressing the centre button, slide the switch to [CAMERA] or [VCR].

2 Press the [PUSH OPEN] Button and turn out the LCD Monitor by approximately 90° in the direction of the arrow.
The Finder turns off.

3 Adjust the angle of the LCD Monitor according to the recording angle.
- The LCD Monitor rotates upward a maximum of 180° ❷ and downward by a maximum of 90° ❸ from its normal vertical position. Trying to forcefully rotate it beyond this range could seriously damage the Movie Camera.

Closing the LCD Monitor
Push the LCD Monitor close until the [PUSH OPEN] Button locks with a click.



Handling the Lens Cap

Before you start recording, remove the Lens Cap.

1 You can attach the removed Lens Cap to the Grip Belt.
When not actually recording, always attach the Lens Cap to the Lens to protect it.

Note:
Do not leave the Lens exposed to direct sunlight, as it could bundle the light beams and seriously heat-damage the CCD-Sensor.

Adjusting the Grip Belt

You can adjust the Grip Belt to the size of your hand.

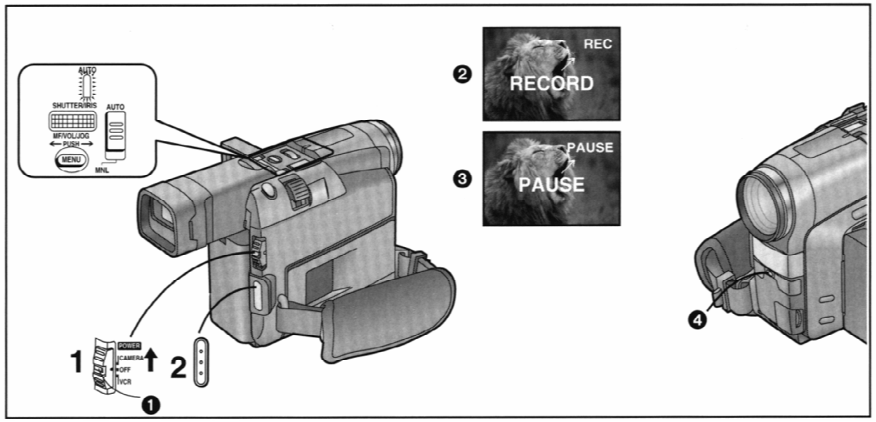
2 Open the Grip Belt Cover and adjust the length of the Grip Belt.

Attaching the Shoulder Strap

Before you go recording outside, we recommend that you attach the Shoulder Strap to prevent the Movie Camera from dropping accidentally.

3 Pull the end of the Shoulder Strap through the Shoulder Strap Holder on the Movie Camera.

4 Fold the end of the Shoulder Strap back, pull it first through the loop and then the Shoulder Strap Length Adjuster.
Pull it out more than 2 cm ❶ from the Shoulder Strap Length Adjuster so that it cannot slip off.



Recording

After setting the [POWER] Switch to [CAMERA] and the Mode Selector Switch to [AUTO], you can simply press the Start/Stop Button to start recording. In this case, the Movie Camera adjusts the focus and white balance fully automatically.
- Depending on the light source and recording situation, correct automatic focusing and white balance adjustment may not be possible. In such cases, adjust them manually.
Focus: **(→ 86)**; White Balance: **(→ 82, 84)**

1 Set the [POWER] Switch to [CAMERA].
While pressing the centre button ❶, slide the switch to [CAMERA].

2 Press the Start/Stop Button.
Recording starts.
The [RECORD] Indication appears briefly and then changes to [REC] ❷.

To pause recording:
Press the Start/Stop Button again.
The [PAUSE] Indication appears ❸.

To finish recording:
Set the [POWER] Switch to [OFF].
It is not necessary to press the centre button in order to slide the switch to [OFF].

- **If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. To resume recording from this condition, set the [POWER] Switch to [OFF] and then to [CAMERA] again.**

Recording Lamp (Tally Lamp)
The Recording Lamp lights ❹ during recording to let the people in front of the Movie Camera know that recording is being performed.
If you set [REC LAMP] on the [CAMERA MENU3] Menu to [OFF], the Recording Lamp does not light.

Playing Back the Sound Recorded with Audio Dubbing

Depending on the setting selected for [12bit AUDIO] on the [VCR MENU1] Menu, the sound added with audio dubbing and the original sound are played back as follows:

ST1:	The original sound alone is played back.
ST2:	The dubbed sound alone is played back.
MIX:	The original sound and the sound added with audio dubbing are played back together.

- **Do not perform audio dubbing onto unrecorded parts of the tape. This could cause the playback picture and sound to be distorted.**
- If you reset the Tape Counter to zero at the point where you want the audio dubbing to end and turn on the Memory Stop Function **(→ 170)**, the audio dubbing automatically stops when the tape reaches that point.

Remote Controller

Using the wireless Remote Controller supplied with the Movie Camera allows operating most of the Movie Camera's major functions from a distance.

Buttons on the Remote Controller

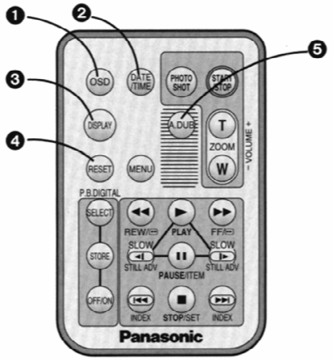
❶ **Indication Output Button [OSD] (→ 54)**
To display the function and operation indications on a connected TV.

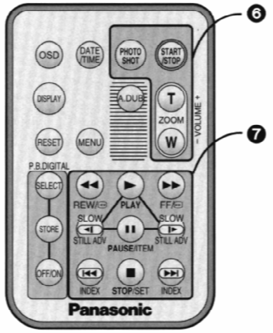
❷ **Date and Time Button [DATE/TIME] (→ 46)**
To make the Date/Time Indication appear or disappear in the picture during recording or playback.

❸ **Indication Shift Button [DISPLAY] (→ 178)**
To select the desired Counter Indication.

❹ **Reset Button [RESET] (→ 170)**
To reset the Tape Counter to zero.

❺ **Audio Dubbing Button [A.DUB] (→ 96)**
To perform audio dubbing.


❶
❷
❸
❹
❺
OSD
DATE/TIME
PHOTO SHOT
START/STOP
DISPLAY
A.DUB
T
ZOOM
W
– VOLUME +
RESET
MENU
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
PLAY
FF/
SLOW
STILL ADV
PAUSE/ITEM
INDEX
STOP/SET
INDEX
Panasonic


❻
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DATE/TIME
PHOTO SHOT
START/STOP
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ZOOM
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– VOLUME +
RESET
MENU
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/
PLAY
FF/
SLOW
STILL ADV
PAUSE/ITEM
INDEX
STOP/SET
INDEX
Panasonic

❻ **Controls for Recording and Sound Volume**

Photoshot Button [PHOTO SHOT] (→ 38)
To record still pictures.

Recording Start/Stop Button [START/STOP] (→ 30)
To start and pause recording.

Zoom/Sound Volume Buttons [ZOOM/VOLUME]

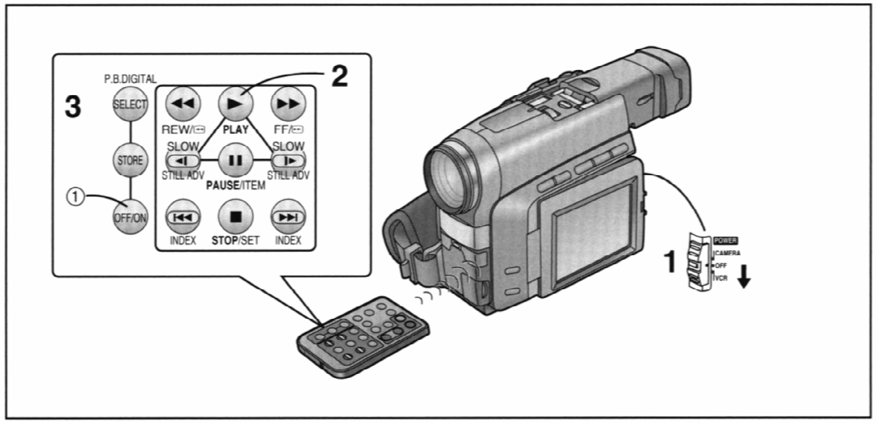
CAMERA Mode:	To zoom in and out. **(→ 36)**
VCR Mode:	To adjust the volume of the playback sound. **(→ 46)**

❼ **Controls for Playback and Menu Settings**

Rewind/Review Button [◀◀]
To start review playback **(→ 48)** if pressed during normal playback; and to rewind the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(→ 58)** in reverse direction if kept pressed in the Recording Pause Mode. Pressing it briefly activates the Recording Check Function **(→ 32)**.

Fast-forward/Cue Button [▶▶]
To start cue playback **(→ 48)** if pressed during normal playback; and to fast-forward the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(→ 58)** in forward direction if kept pressed in the Recording Pause Mode.

Play Button [▶] (→ 46)
To start playback.



Playing Back with Special Effects

(Playback Digital Effects)

There are 8 different modes available for adding special digital picture effects to your recordings during playback. They are identical to the Digital Effects 1 and 2 **(➜ 74)** that can be used during recording.

❶WIPE
❷MIX
❸STROBE
❹NEGA
❺SEPIA
❻B/W
❼TRACER
❽SOLARI

1 **Set the [POWER] Switch to [VCR].**

2 **Press the Play Button [▶].**

3 **Press the [SELECT] Button on the Remote Controller to select the desired digital effect.**
Repeatedly pressing the [SELECT] Button changes the selected digital effect in the order ❶ to ❽.
Selecting a digital effect is also possible by setting [EFFECT SELECT] on the [VCR MENU1] Menu to the desired effect.

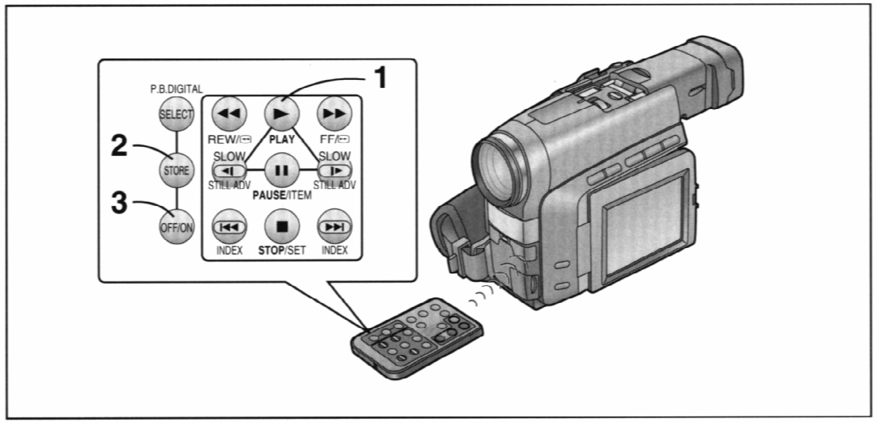
Suspending the Playback Digital Effect Temporarily

You can suspend and re-activate the digital effect by repeatedly pressing the [OFF/ON] Button ①. Suspending the digital effect is also possible by setting [EFFECT] on the [VCR MENU1] Menu to [OFF], and later to [ON] to re-activate it. When the digital effect is temporarily suspended, the indication of the selected effect flashes.

Cancelling the Digital Effect

Set [EFFECT SELECT] on the [VCR MENU1] Menu to [OFF].

- The signal of the picture with a digital effect added during playback cannot be output from the DV Terminal **(➜ 12)** or the Digital Still Picture Terminal. **(➜ 126)**.



Playing Back with Special Effects

(Playback Digital Effects) (Continued)

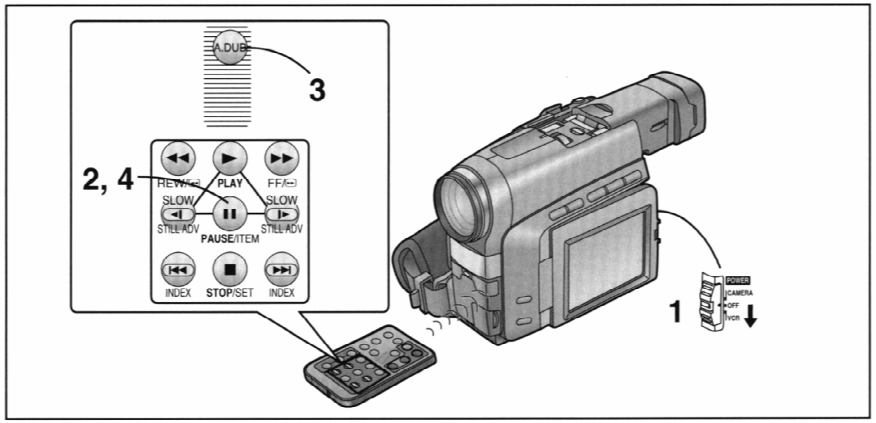
■ **Wipe Function and Mix Function**
After having selected [WIPE] or [MIX] in Step 3 on page 92:

1 **Press the [▶] Button to start playback.**

2 **Press the [STORE] Button at the moment that you want to store as still image in memory.**
The [WIPE] or [MIX] Indication appears and the picture is stored in memory.

3 **Press the [OFF/ON] Button at the scene at which you want to use a Wipe or Mix effect.**
The scenes change with a Wipe or Mix effect.

- Operating the Wipe Function and the Mix Function during playback is only possible with Remote Controller.
- It is not possible to add a Wipe or Mix effect during playback of an unrecorded part on the tape.
- If you press the [OFF/ON] Button while the Wipe or Mix is being performed, the effect is paused at that point. If you press the [OFF/ON] Button again, the effect resumes.



Adding New Sound on a Recorded Cassette (Audio Dubbing)

To perform audio dubbing, the Remote Controller is necessary.
You can add music or narration on a recorded cassette.

- If [AUDIO REC] on the [CAMERA MENU2] Menu has been set to [16bit], performing audio dubbing erases the previously recorded sound. (If you intend to perform audio dubbing but also want to keep the original sound, be sure to set [AUDIO REC] to [12bit] before making the original recording.)
- It is not possible to perform audio dubbing onto recordings made in the LP Mode. **(➜ 24)**

1 **Insert the recorded cassette and set the [POWER] Switch to [VCR].**

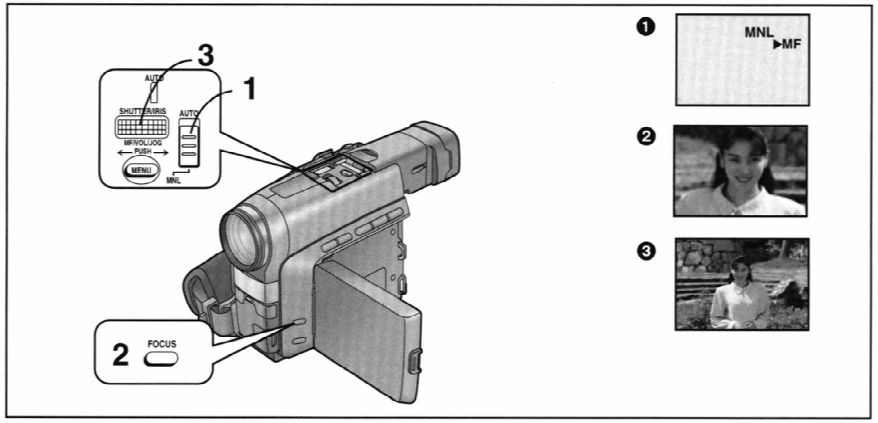
2 **At the point from which you want to insert the new sound, switch the Movie Camera over to the Still Playback Mode.**

3 **Press the [A.DUB] Button on the Remote Controller.**

4 **Press the Pause Button [❚❚] on the Remote Controller to start audio dubbing.**

Stopping Audio Dubbing

Press the Pause Button [❚❚] on the Remote Controller. The Movie Camera is again in the Still Playback Mode.



Focusing on the Subject Manually

(Manual Focus)

This makes it possible to adjust the focus manually for subjects and recording situations for which automatic focusing is not precise.

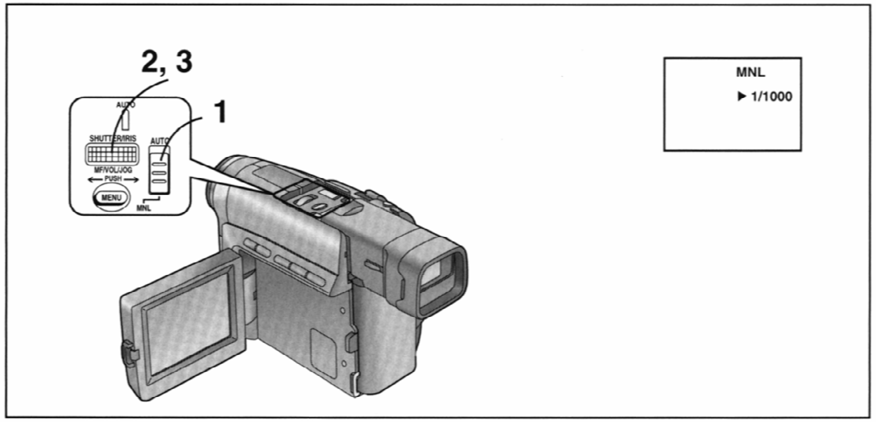
1. **Set the Mode Selector to [MNL].**
   The [MNL] Indication appers.
2. **Press the [FOCUS] Button.**
   The [▶MF] Indication ❶ appears.
   MF: Manual Focus Mode
3. **Turn the [PUSH] Dial until the subject is sharp.**

Returning to the Automatic Focusing Mode

Press the [FOCUS] Button to make the [▶MF] Indication disappear. Or, set the Mode Selector Switch to [AUTO].

Hint for Manual Focus Adjustment

- If you adjust the focus in the wide-angle setting, the subject may go out of focus when you enlarge it. Therefore, enlarge the subject ❷ before you adjust the focus, so that the picture remains focused when you zoom out ❸.
- If you want to adjust the focus manually after having adjusted the shutter speed **(➜ 88)** or the iris **(➜ 90)**, be sure to press the [FOCUS] Button to make the [▶MF] Indication appear, even if the [MF] Indication is displayed.



Adjusting the Shutter Speed Manually

To achieve special creative effects or to cope with special lighting situations or fast-action scenes, you can adjust the shutter manually.

1. **Set the Mode Selector Switch to [MNL].**
   The [MNL] Indication appears.
2. **Press the [PUSH] Dial.**
   The Shutter Speed Indication appears.
   You can change between the Shutter Speed Indication and the Iris (F Number) **(➜ 90)** Indication by repeatedly pressing the [PUSH] Dial.
3. **Turn the [PUSH] Dial to adjust the shutter speed.**

Range of Shutter Speed Adjustment

1/50–1/8000 s

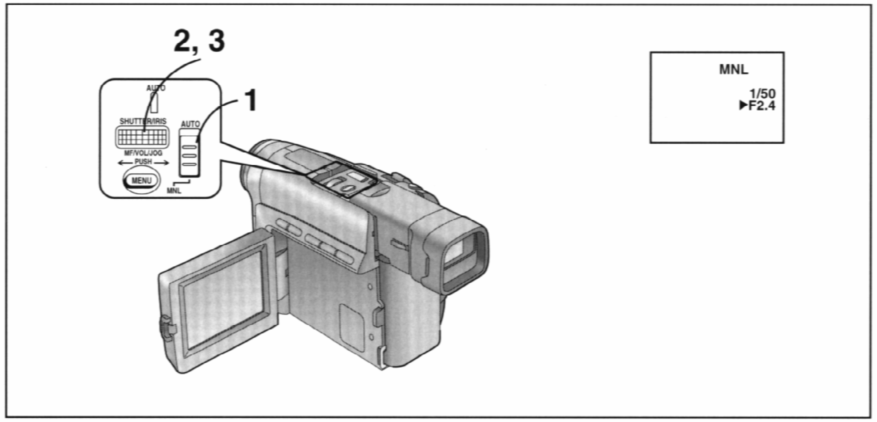
The standard shutter speed is 1/50 s.

The nearer to [1/8000] a setting you select, the faster the shutter speed becomes.

- In the Progressive Photoshot Mode, the range of selectable shutter speeds is limited to 1/50 s to 1/500 s.
- When [PROG.AE] **(➜ 70)** on the [CAMERA MENU1] Menu is set to any mode other than [OFF] or when [EFFECT1] is set to [GAINUP] **(➜ 74)**, manually adjusting the shutter speed is not possible.

Returning to the Normal Shutter Speed

Set the Mode Selector Switch to [AUTO].



Adjusting the Iris (F Number) Manually

To achieve special creative effects or to cope with special lighting situations, you can adjust the iris (F number) manually.

1. **Set the Mode Selector Switch to [MNL].**
   The [MNL] Indication appears.
2. **Press the [PUSH] Dial twice.**
   The [▶F] Indication appears.
   You can change between the Iris (F Number) Indication and the Shutter Speed Indication by repeatedly pressing the [PUSH] Dial.
3. **Turn the [PUSH] Dial to adjust the iris.**

Range of Iris Adjustment

CLOSE (Closed) → F16...F2.0 → OP (Opened)
+0 dB...OP+18 dB

The nearer to [CLOSE] a value you select, the darker the picture becomes.

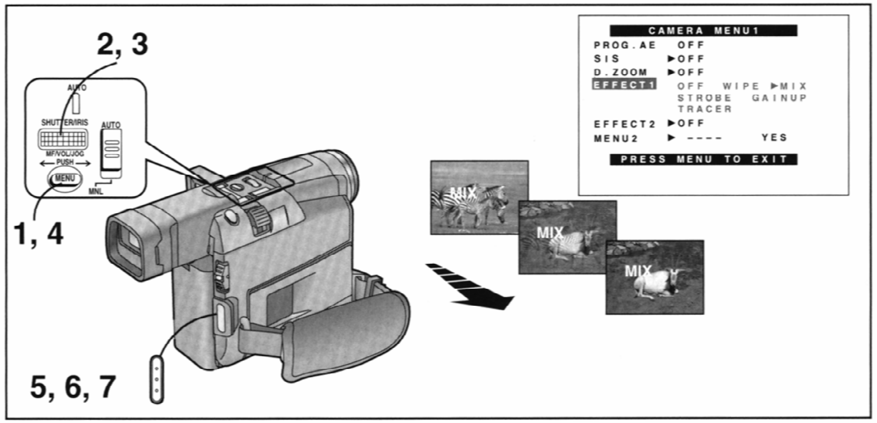
The nearer to [OP+18 dB] a value you select, the brighter the picture becomes.

The figures with +dB show the Gain-up value. If you increase the value too much, the picture quality deteriorates.

Returning to the Normal Iris Value (F Number)

Press the [PUSH] Dial one time to make the [▶F] Indication disappear. Or set the Mode Selector Switch to [AUTO].

- Manually adjusting the shutter speed after performing manual iris adjustment changes the iris back to automatic adjustment. Therefore, if you want to adjust both the shutter speed and iris manually, be sure to adjust the shutter speed first. **(➜ 88)**
- Manual iris adjustment is not possible when [PROG.AE] on the [CAMERA MENU1] Menu is set to any setting other than [OFF].**(➜ 70)**



CAMERA MENU1
PROG.AE OFF
SIS ▶OFF
D.ZOOM ▶OFF
EFFECT1 OFF WIPE ▶MIX
STROBE GAINUP
TRACER
EFFECT2 ▶OFF
MENU2 ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

■ Mix Mode

It gradually fades out a still picture of the last recorded scene while fading in the moving picture of the new scene.

1 **Press the [MENU] Button.**
The [CAMERA MENU1] Menu appears.

2 **Turn the [PUSH] Dial to select [EFFECT1].**

3 **Press the [PUSH] Dial to select [MIX].**

4 **Press the [MENU] Button to exit the Menu.**
The [MIX] Indication appears.

5 **Press the Start/Stop Button to start recording.**
The normal recording starts.

6 **Press the Start/Stop Button to pause recording.**
The last picture is stored in memory.
The [MIX] Indication changes to [MIX].

7 **Press the Start/Stop Button to start recording again.**
The last picture gradually fades out while the new scene fades in.

Recording with Natural Colours

(White Balance)

This Movie Camera automatically adjusts the white balance to ensure that the pictures are recorded with natural colours. For certain types of subjects and lighting conditions, however, this Auto White Balance Adjustment Mode may not be able to ensure natural colours **(➔ 164, 166).** In these cases, you can select either one of the 3 preset modes explained below (indoor, outdoor, or the last manually adjusted white balance setting), or you can manually adjust the white balance **(➔ 84)**.

1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

2 **Press the White Balance [W.B] Button.**
Repeatedly press the [W.B] Button to select the desired White Balance Mode.

The modes change in the following order:

❶ Indoor Mode
(recording under incandescent lamp) (☼)

❷ Outdoor Mode (☀)

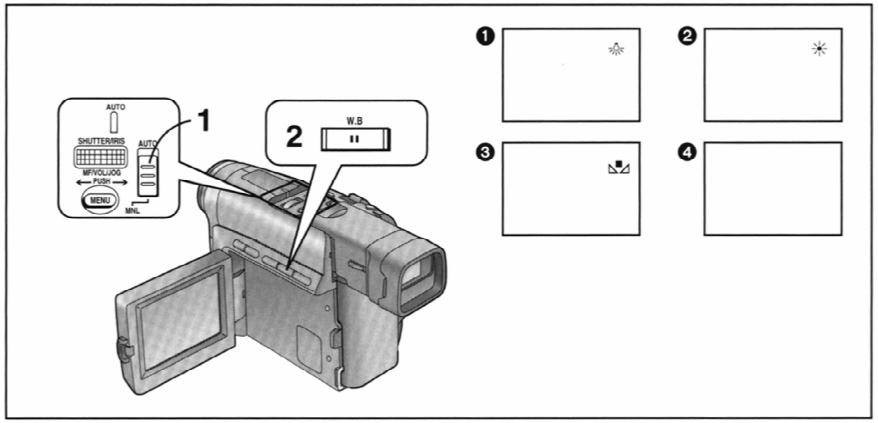
❸ Last manually adjusted White Balance setting (▣) **(➔ 84)**

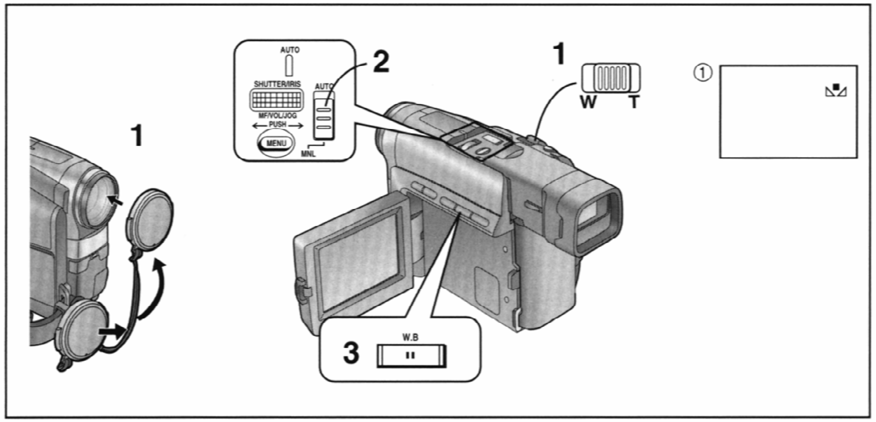
❹ Automatic White Balance Adjustment
(no indication)

- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP] or you have set [EFFECT2] to [SEPIA] or [B/W], it is not possible to change the white balance mode.
- To change the white balance mode, the Movie Camera must be set within the optical zoom range (1× – 10×). If you try to change it in the digital zoom range, the [▣] Indication flashes.

Returning to the Auto White Balance Adjustment Mode

Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([☼], [☀], [▣]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].





Adjusting the White Balance Manually

Use the Manual White Balance Adjustment Mode for all types of lighting outside the range ❶ **(➔ 166)**, as the Auto White Balance Adjustment Mode can only ensure natural colours for the types of lighting within that range. For optimum results under almost any type of lighting, we recommend that you adjust the white balance manually for each new scene.

1 **Attach the Lens Cap and zoom in until the entire screen becomes white.**

2 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

3 **Keep the [W.B] Button pressed until the [▣] Indication ① stops flashing and remains lit.**

- The Manual White Balance Adjustment is now finished. If you want to use this setting again later on, for example after having used Automatic White Balance Adjustment, you can recall it by pressing the [W.B] Button 3 times. (In this case, the [▣] Indication flashes.)

- When the [▣] Indication remains flashing under weak illumination, the Manual White Balance Adjustment cannot be set manually.
- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP], or you have set [EFFECT2] to [SEPIA] or [B/W], it is not possible to adjust the white balance.
- Adjusting the white balance is only possible when the Movie Camera is set within the optical zoom range (1× – 10×). If you try to adjust it in the digital zoom range, the [▣] Indication flashes.

Returning to the Auto White Balance Adjustment Mode

Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([☼], [☀], [▣]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].

❶

❷

❸

❹

❺

❻

❼

❽

❾

Recording with Special Effects

(Digital Effects)

There are 9 different modes available for adding special digital picture effects.

Digital Effects 1 [EFFECT1]

❶ **Wipe Mode [WIPE]**
It gradually replaces a picture of the last previously recorded scene with the picture of the new scene, like drawing a curtain. For details, **(➜ 78)**.

❷ **Mix Mode [MIX]**
It gradually fades out the picture of the last previously recorded scene while fading in the picture of the new scene. For details, **(➜ 80)**.

❸ **Strobe Mode [STROBE]**
It records the pictures with a stroboscope-like effect.

❹ **Gain-up Mode [GAIN UP]**
It electronically brightens up the picture.
In this mode, adjust the focus manually.

❺ **Trailing Effect Mode [TRACER]**
The picture is recorded with a trailing effect.

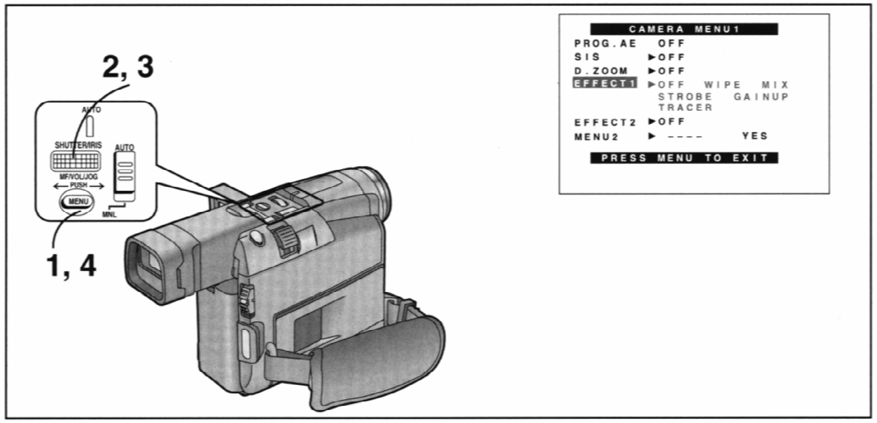
Digital Effects 2 [EFFECT2]

❻ **Negative/Positive Mode [NEGA]**
The recorded pictures have reversed colours similar to photographic negatives.

❼ **Sepia Mode [SEPIA]**
Scenes are recorded with a brown tint similar to the colour of old photographs.

❽ **Black & White Mode [B/W]**
The picture is recorded in black and white.

❾ **Solarisation Mode [SOLARI]**
The picture is recorded with an effect similar to a painting.


2, 3
AUTO
SHUTTER/IRIS
AUTO
MF/VOL/JOG
PUSH
MENU
MNL
1, 4
CAMERA MENU1
PROG.AE OFF
SIS ▶OFF
D.ZOOM ▶OFF
EFFECT1 ▶OFF WIPE MIX
STROBE GAINUP
TRACER
EFFECT2 ▶OFF
MENU2 ▶ ---- YES
PRESS MENU TO EXIT

Recording with Special Effects

(Digital Effects) (Continued)

Selecting the Desired Digital Effect

1 Press the [MENU] Button.
The [CAMERA MENU1] Menu appears.

2 Turn the [PUSH] Dial to select [EFFECT1] or [EFFECT2].

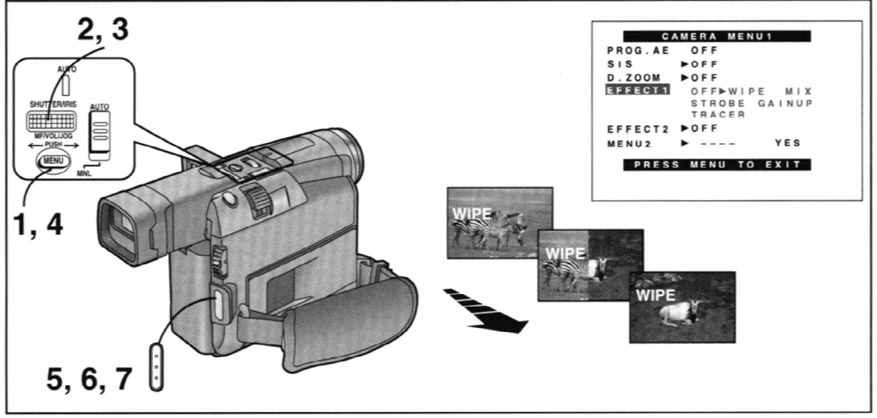
3 Press the [PUSH] Dial to select the desired digital effect.

4 Press the [MENU] Button to exit the Menu.
- The picture now has the selected digital effect. However, the effect of the Wipe Function and the Mix Function only become visible when actually recording in the respective mode. **(➜ 78, 80)**

- It is not possible to use any of the Digital Effects in [EFFECT1] while the Progressive Photoshot Mode is activated.
- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP], you need to adjust the focus manually; however, adjusting the shutter speed and selecting a white balance mode are not possible.
- If you have set [EFFECT2] on the [CAMERA MENU1] Menu to [B/W] or [SEPIA], changing the selected white balance mode is not possible.
- It is not possible to select the Sports Mode [🏃] or the Portrait Mode [👥] together with the Gain-up Mode [GAINUP] on the [CAMERA MENU1] Menu.

Cancelling the Digital Effect

Set [EFFECT1] or [EFFECT2] on the [CAMERA MENU1] Menu to [OFF].


2, 3
AUTO
SHUTTER/IRIS
AUTO
MF/VOL/JOG
PUSH
MENU
MNL
1, 4
5, 6, 7
CAMERA MENU1
PROG.AE OFF
SIS ▶OFF
D.ZOOM ▶OFF
EFFECT1 OFF▶WIPE MIX
STROBE GAINUP
TRACER
EFFECT2 ▶OFF
MENU2 ▶ ---- YES
PRESS MENU TO EXIT
WIPE
WIPE
WIPE

Recording with Special Effects

(Digital Effects) (Continued)

■ Wipe Mode

It gradually replaces a still picture of the last recorded scene with the moving picture of the new scene, like drawing a curtain.

1 Press the [MENU] Button.
The [CAMERA MENU1] Menu appears.

2 Turn the [PUSH] Dial to select [EFFECT1].

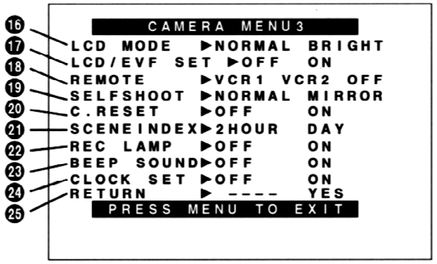
3 Press the [PUSH] Dial to select [WIPE].

4 Press the [MENU] Button to exit the Menu.
The [WIPE] Indication appears.

5 Press the Start/Stop Button to start recording.
The normal recording starts.

6 Press the Start/Stop Button to pause recording.
The last picture is stored in memory.
The [WIPE] Indication changes to [WIPE].

7 Press the Start/Stop Button to start recording again.
The last picture of the previous scene is gradually replaced by the new scene.


⑯
⑰
⑱
⑲
⑳
㉑
㉒
㉓
㉔
㉕
CAMERA MENU3
LCD MODE ▶NORMAL BRIGHT
LCD/EVF SET ▶OFF ON
REMOTE ▶VCR1 VCR2 OFF
SELFSHOOT ▶NORMAL MIRROR
C.RESET ▶OFF ON
SCENEINDEX▶2HOUR DAY
REC LAMP ▶OFF ON
BEEP SOUND▶OFF ON
CLOCK SET ▶OFF ON
RETURN ▶ ---- YES
PRESS MENU TO EXIT

Camera Mode Menu (Continued)
[CAMERA MENU3]

⑯ LCD Lighting Mode [LCD MODE] (➔ 142)

⑰ LCD and Finder Adjustment [LCD/EVF SET] (➔ 142)

⑱ Remote Controller Mode [REMOTE] (➔ 110)

⑲ Self-Recording [SELFSHOOT] (➔ 34)

⑳ Counter Reset [C.RESET] (➔ 170)
To reset the counter to zero.
However, the Time Code cannot be reset.

㉑ Scene Index Mode [SCENEINDEX] (➔ 66)

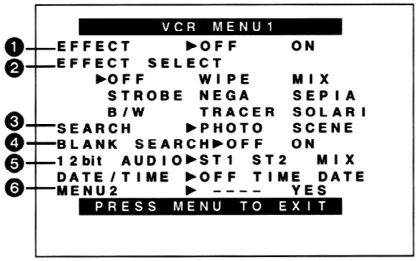
㉒ Recording Lamp [REC LAMP] (➔ 30)

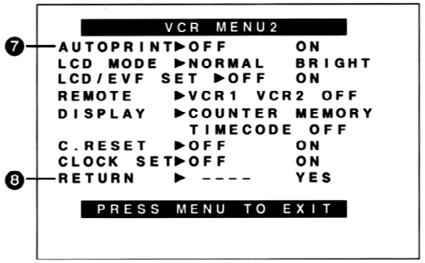
㉓ Beep Sound [BEEP SOUND]

If you set [BEEP SOUND] to [ON], a confirmation/alarm beep sound is emitted in the following cases:
-When you turn on the Movie Camera.
-When you start recording and pause recording.
-When the tape reaches its end during recording, or when the tape has reached its end and you try to start recording.
-When you try to start recording without having inserted a cassette.
-When you insert a cassette with its erasure prevention slider set to [SAVE] and try to start recording.
-When condensation has formed inside the Movie Camera.

㉔ Date and Time Setting [CLOCK SET] (➔ 138)

㉕ Returning to the Previous Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [CAMERA MENU2] Menu.


①
②
③
④
⑤
⑥
VCR MENU1
EFFECT ▶OFF ON
EFFECT SELECT
▶OFF WIPE MIX
STROBE NEGA SEPIA
B/W TRACER SOLARI
SEARCH ▶PHOTO SCENE
BLANK SEARCH▶OFF ON
12bit AUDIO▶ST1 ST2 MIX
DATE/TIME ▶OFF TIME DATE
MENU2 ▶ ---- YES
PRESS MENU TO EXIT


⑦
⑧
VCR MENU2
AUTOPRINT▶OFF ON
LCD MODE ▶NORMAL BRIGHT
LCD/EVF SET ▶OFF ON
REMOTE ▶VCR1 VCR2 OFF
DISPLAY ▶COUNTER MEMORY
TIMECODE OFF
C.RESET ▶OFF ON
CLOCK SET▶OFF ON
RETURN ▶ ---- YES
PRESS MENU TO EXIT

VCR Mode Menu
[VCR MENU1]

① Digital Effect On/Off [EFFECT] (➔ 92)

② Digital Effect Selection [EFFECT SELECT] (➔ 92)

③ Index Search Mode [SEARCH] (➔ 62)

④ Blank Search [BLANK SEARCH] (➔ 60)

⑤ Audio Output Mode [12bit AUDIO] (➔ 96)

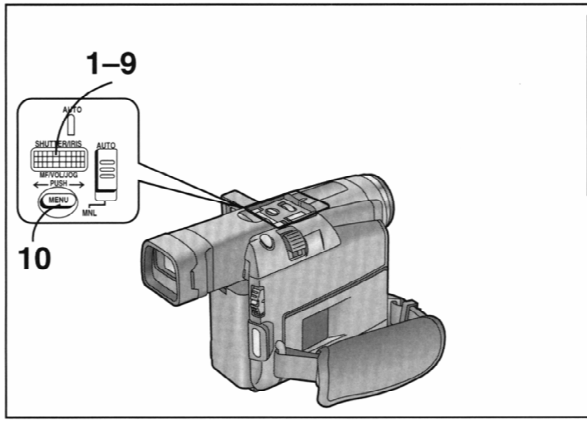
⑥ Advancing to Menu 2 [MENU2]
If you set [MENU2] to [YES], the Menu changes to the [VCR MENU2] Menu.

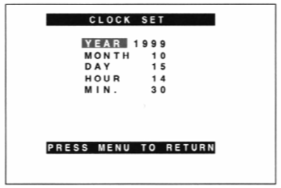
[VCR MENU2]

⑦ Automatic Printing [AUTOPRINT] (➔ 122)

⑧ Returning to the Previous Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [VCR MENU1] Menu.

- All other items on the VCR Mode Menus are the same as on the Camera Mode Menus.


1–9
AUTO
SHUTTER/IRIS
AUTO
MF/VOL/JOG
PUSH
MENU
MNL
10


CLOCK SET
YEAR 1999
MONTH 10
DAY 15
HOUR 14
MIN. 30
PRESS MENU TO RETURN

Setting the Date and Time

If you set [CLOCK SET] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [ON], the Menu shown above appears.

For example: To set the clock to 15th October 1999, 14:30.

1 **Turn the [PUSH] Dial to set to [1999].**
The years change in the following order:
1990→1991→...→2089→1990→...

2 **Press the [PUSH] Dial to select [MONTH].**

3 **Turn the [PUSH] Dial to set to [10].**

4 **Press the [PUSH] Dial to select [DAY].**

5 **Turn the [PUSH] Dial to set to [15].**

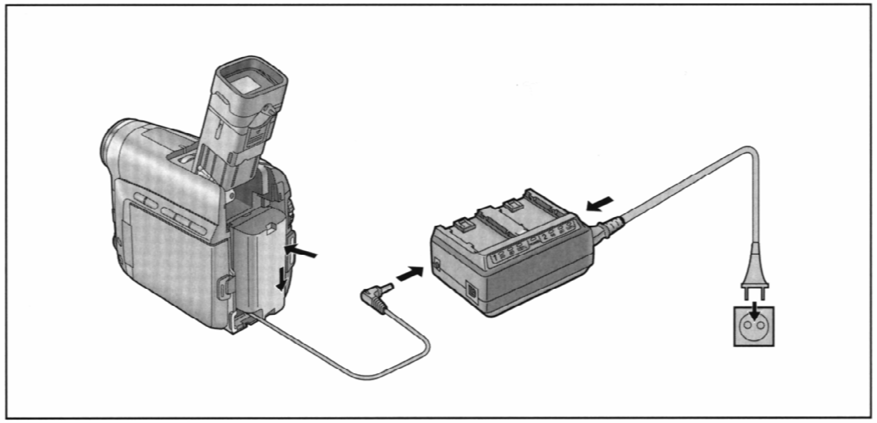
6 **Press the [PUSH] Dial to select [HOUR].**

7 **Turn the [PUSH] Dial to set to [14].**

8 **Press the [PUSH] Dial to select [MIN.].**

9 **Turn the [PUSH] Dial to set to [30].**

10 **Press the [MENU] Button to finish the date and time setting.**
The operation of the clock starts from [00] seconds.
- Pressing the button one more time makes the [VCR MENU2] Menu disappear.



Charging the Built-in Lithium Battery
The built-in battery maintains the operation of the clock. When the [⊗] Indication appears, the built-in lithium battery is discharged. Charge the discharged battery in the following way and after charging is finished, set the date and time.

1 **Connect the AC Adaptor to the Movie Camera and to an AC mains socket.**
(→ 16)

2 **Leave the Movie Camera turned off.**

3 **Leave the Movie Camera in this condition for approximately 4 hours.**
After charging for 4 hours, the built-in lithium battery can power the clock for approximately 3 months.

Adjusting the LCD Monitor/Finder

If you set [LCD/EVF SET] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [ON], the following items are displayed.

LCD Brightness [LCD BRIGHTNESS]
To adjust the brightness of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

LCD Colour Level [LCD COLOUR LEVEL]
To adjust the colour saturation of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the stronger are the colours.

Finder Brightness [EVF BRIGHTNESS]
To adjust the brightness of the Finder. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

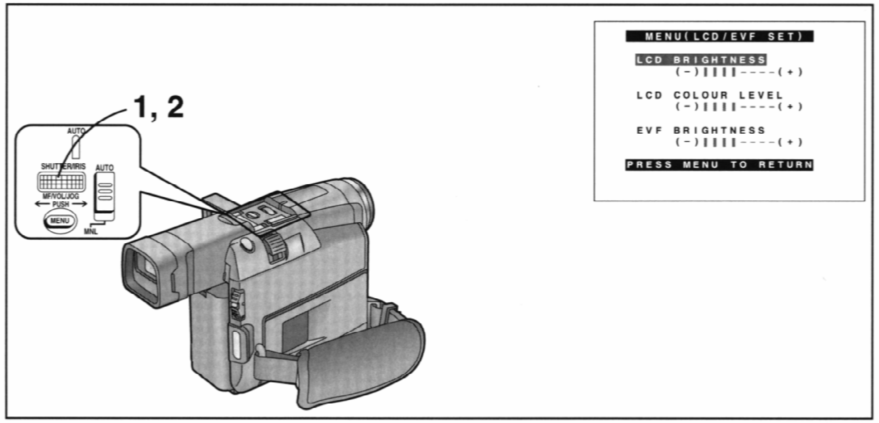
1 **Press the [PUSH] Dial to select the item that you want to adjust.**

2 **Turn the [PUSH] Dial. Turning it increases or decreases the number of vertical bars of the Bar Indication.**

If you use the Remote Controller for this adjustment, press the [ITEM] Button and then adjust the brightness by pressing the [SET] Button. The number of bars gradually increases toward the right end, and then decreases again.

Increasing the Brightness of the Whole LCD Monitor Screen
Set [LCD MODE] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [BRIGHT].

- These adjustments have no influence on the actually recorded picture.



Cautions for Use

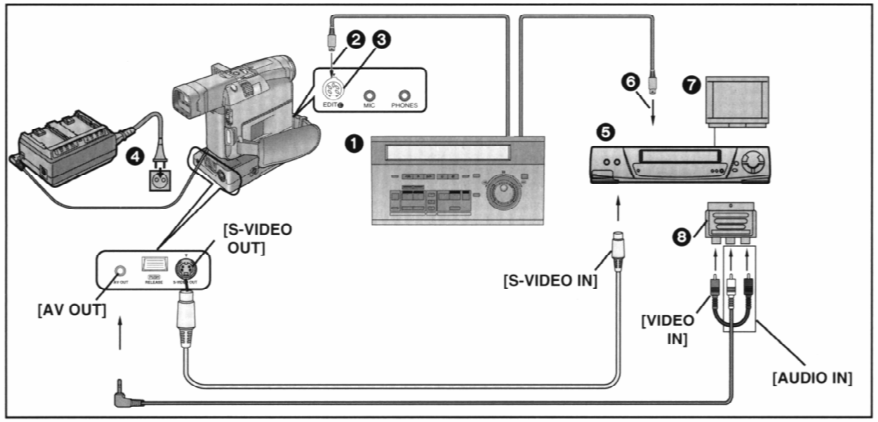
Take care that no water enters the Movie Camera when using it in the rain and snow or on the beach.
- The Movie Camera and the cassette could become damaged. (It might not be repairable.)
- If seawater has accidentally splashed on the Movie Camera, moisten a soft cloth with tap water, wring it well and wipe the camera body carefully with it. Then thoroughly wipe it with a soft, dry cloth.

Keep the Movie Camera away from magnetized equipment (TVs, Video games, etc.).
- If you use the Movie Camera on or near a TV, the electromagnetic radiation may cause picture and sound distortion.
- Strong magnetic fields generated by speakers and large motors may damage the recordings on the tape and distort the picture.
- The electromagnetic radiation from micro-processors can adversely influence the Movie Camera and cause picture and sound distortion.
- If the Movie Camera is adversely influenced by magnetized equipment and does not work correctly, turn the Movie Camera off, remove the Battery or disconnect the AC Adaptor and attach the Battery or connect the AC Adaptor again. Then turn the Movie Camera on.

Do not use the Movie Camera near a radio transmitter or high-voltage power line.
- If you record near a radio transmitter or high-voltage power line, the recorded picture and sound may be adversely influenced.

Do not use the Movie Camera for surveillance and other industrial applications.
- If the Movie Camera is being used for a long time, the inside temperature could rise excessively and this may cause malfunction.
- This Movie Camera is not designed for industrial use.

Take care that no sand and fine dust enters the Movie Camera when using it on a beach or similar places.
- Sand and dust could damage the Movie Camera and cassette. (Be careful when inserting and removing the cassette.)



Copying with the Help of an Editing Controller

If you connect the Movie Camera to an Editing Controller equipped with 5-pin Edit Socket, this Movie Camera's playback functions can be controlled from the Editing Controller.
(The Output Terminal Box [AV ONE TOUCH STATION] is necessary.)

After connecting all equipment as shown above, perform the necessary operations.

When Connecting the Editing Controller VW-EC500E ❶ (optional)

- A VCR equipped with 5-pin Edit Socket is necessary.
- When you connect the VW-EC500E to the Movie Camera, an adjustment on the VW-EC500E is necessary. For the operation of the Editing Controller, refer to its operating instructions.

When Editing with Time Code

Press the [DISPLAY] Button on the Remote Controller to make the Time Code appear.

- When the Time Code is displayed, the Time Code Signal is output from the Edit Socket.
- When the Counter Indication is displayed, the Linear Tape Counter Signal is output.

❷ To Edit Socket

❸ Edit Socket

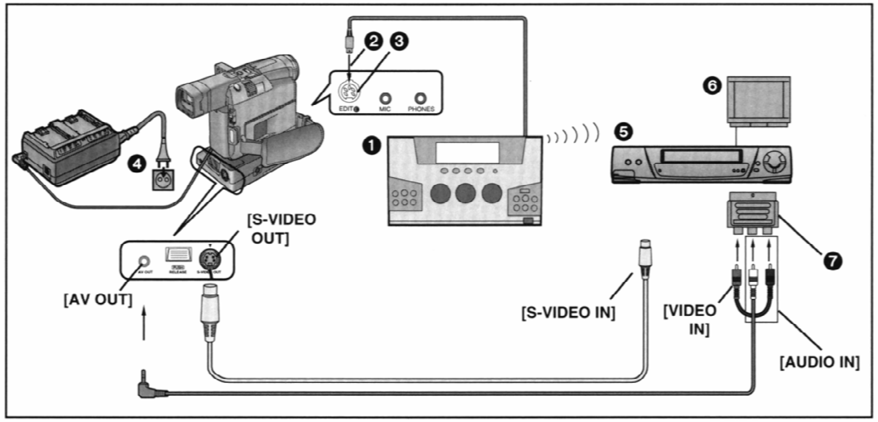
❹ Connect the AC Adaptor.

❺ VCR (not supplied)

❻ To Edit Socket

❼ TV (not supplied)

❽ 21-Pin Adaptor



When Connecting the Editing Controller VW-EC1E (optional)

- When you use the Editing Controller VW-EC1E ❶, it is not necessary to connect it to the Edit Socket on the VCR, as the VCR's operation is performed via infrared remote control. Therefore, editing is also possible onto VCRs not equipped with an Edit Socket.
- For the operation of the Editing Controller, refer to its operating instructions.

❷ To Edit Socket

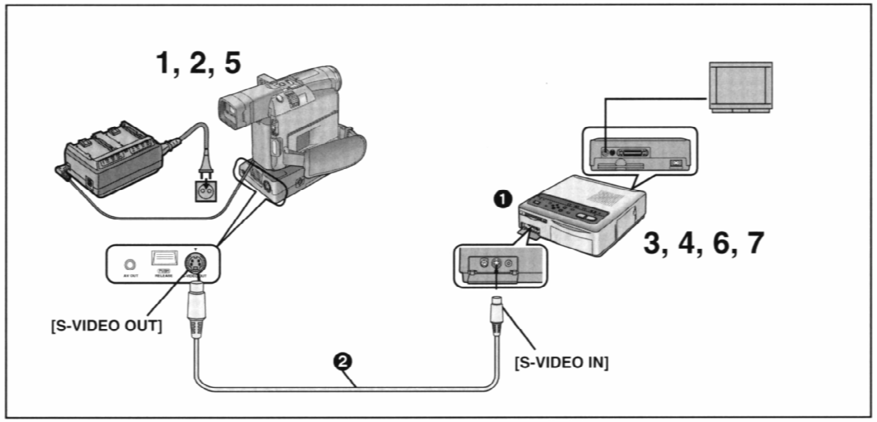
❸ Edit Socket

❹ Connect the AC Adaptor.

❺ VCR (not supplied)

❻ TV (not supplied)

❼ 21-pin Adaptor



Using the Movie Camera with a Video Printer

If you connect the Movie Camera to a Video Printer ❶, you can print still pictures from scenes recorded with the Movie Camera.

Movie Camera:

1 **Set the [POWER] Switch to [VCR].**
While pressing the centre button, slide the switch to [VCR].

2 **Insert a recorded cassette.**

Video Printer:

3 **Turn the Video Printer on.**

4 **If the Video Printer is equipped with Digital Image Stabilizer Function and/or Moving/Still Picture Mode, adjust them according to the picture being input.**

Movie Camera:

5 **Press the Play Button [▶].**

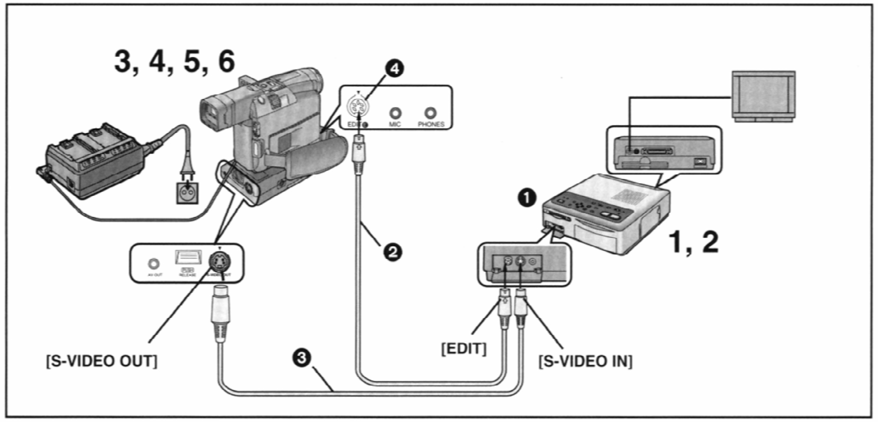
Video Printer:

6 **Store the image in memory.**

7 **Start printing.**

- For details about the operation of the Video Printer, read its operating instructions.

❷ S-Video Cable



Using the Automatic Printing Function (Autoprint)

If you connect the Movie Camera to a Video Printer ❶ equipped with 5-pin Edit Socket, you can use the AutoPrint Function to automatically print all still pictures recorded in the Photoshot Function.

Video Printer:

1 Turn the Video Printer on.

2 Make the necessary settings on the Video Printer according to the input signal.

Movie Camera:

3 Set the [POWER] Switch to [VCR].
While pressing the centre button, slide the switch to [VCR].

4 Search for the first still picture from which you want to start printing with the Autoprint Function.
If you want to print all still pictures recorded on the cassette, rewind the tape to its beginning.

5 Press the [MENU] Button.

6 Set [AUTOPRINT] on the [VCR MENU2] Menu to [ON].
Automatic printing starts.

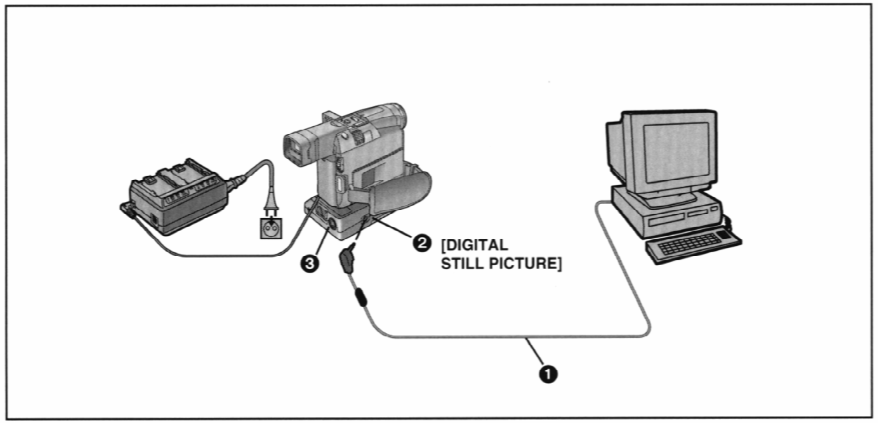
- If you want to stop the automatic printing in the middle, press the Stop Button [■] on the Movie Camera.

❷ Edit Cable VW-K5E (optional)

❸ S-Video Cable

❹ Edit Socket

- When the cooling function of the Video Printer activates and the printing speed slows down, automatic printing may stop. In this case set [AUTOPRINT] on the [VCR MENU2] Menu to [ON] again.
- If you replace the ink cassette or paper during printing, the same picture may be printed twice.
- If still pictures are recorded successively in the Photoshot Mode, some pictures may be skipped during printing.
- Before storing an image in memory on the Video Printer, press the [OSD] Button (**→ 100**) on the Remote Controller of the Movie Camera so that no indications appear in the picture. Otherwise, the Counter Indication and other function indications are also printed in the picture.
- In the following cases, some pictures may be skipped when printing with the Autoprint Function.
  - When you print still pictures recorded in the Photoshot Mode on a video camera of another brand.
  - If you turn the Movie Camera on and off several times (3 times or more) between recording two still pictures in the Photoshot Mode.
  - When you record a still picture in the Photoshot Mode on the same part of a cassette where a Photoshot picture was recorded before.
  - When you select a different recording speed (SP/LP) between the recording of two still pictures in the Photoshot Mode.
  - At the first Photoshot picture to be printed.
  - As index signals are not recorded with the still pictures recorded in the Continuous Photoshot Mode, automatic printing of these pictures is not possible.
- The [PRINTER ERROR] Indication appears if the Movie Camera is not correctly connected to the Video Printer or when the ink cassette and/or the paper in the Video Printer are not loaded or used up.



Using the Movie Camera with a Computer

The Personal Computer Connection Kit VW-DTA1E (optional) for Digital Video Cameras makes it possible to connect the Movie Camera to a computer and transmit still video images to it. (The Output Terminal Box [AV ONE TOUCH STATION] is also necessary.)

Computer System Requirements

DV STUDIO can be installed in a PC/AT personal computer which can run Microsoft® Windows® 95.

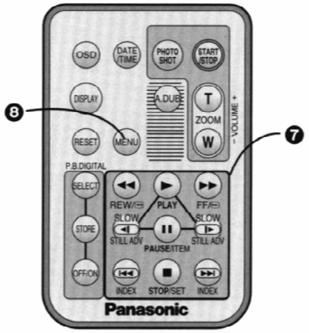
Compatible machines:	Personal computer with 80486DX4 or higher CPU (Pentium™ or higher recommended)
Graphic card:	True Color (approx. 16.7 million colours) recommended (operation also possible even with 256 colours)
Installed memory:	16 MB or more (32 MB or more recommended)
Free hard disk space:	At least 10 MB
Disk drive:	CD-ROM drive
Serial port:	RS-232C (D-sub 9pin)
Other requirements:	Mouse

To connect the Movie Camera to the computer, use the special Interface Adaptor ❶ contained in the Personal Computer Connection Kit.

- When using the Personal Computer Connection Kit, the [POWER] Switch on the Movie Camera must be set to [VCR].
- Pictures that you intend to import into computer applications should be recorded in the SP Mode.
- When recording, take care that the Time Code is uninterrupted from the beginning of the tape.
- Windows® 95 is a trademark of Microsoft Corporation U.S.A.
- All other company and product names in the operating instructions are trademarks of their respective corporations.

❷ Digital Still Picture Terminal

❸ Output Terminal Box [AV ONE TOUCH STATION]


OSD
DATE/TIME
PHOTO SHOT
START/STOP
DISPLAY
A.DUB
T
ZOOM
W
– VOLUME +
RESET
MENU
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/⊟
PLAY
FF/⊟
SLOW
STILL ADV
PAUSE/ITEM
INDEX
STOP/SET
Panasonic
❽
❼

❼ Controls for Playback and Menu Setting (Continued)

Slow Motion/Still Advance Button [◂I, I▸] (➜ 50, 52)
To perform Slow Motion Playback if pressed in the Normal Playback Mode; and to perform Still Advance Playback if pressed in the Still Playback Mode.
(◂I: in reverse direction, I▸: in forward direction)

Index Search Button [I◂◂, ▸▸I] (➜ 62, 64)
To search for recorded scenes marked with an index signal and for still images recorded in the Photoshot Mode.
(I◂◂: in reverse direction, ▸▸I: in forward direction)

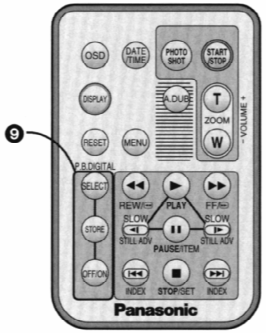
Stop Button [■] (➜ 46, 64)
To stop the tape.
Or when the menu is displayed, to set a desired mode or value for the selected item.

Pause Button [II] (➜ 52, 64, 96)
To pause playback. The playback picture stands still.
Or when the menu is displayed, to select an item.

❽ Menu Button [MENU]
Pressing the Menu Button [MENU] displays the Menu.
In this case, the functions of the following buttons are changed:

Pause Button → Item Button
To select items on the Menu.

Stop Button → Setting Button
To set the mode for the selected item.

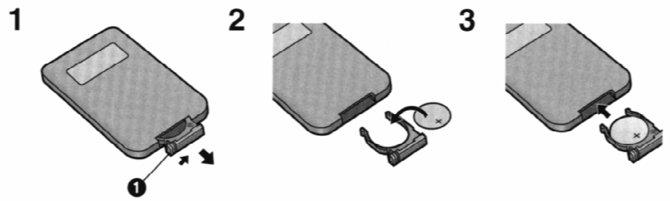

OSD
DATE/TIME
PHOTO SHOT
START/STOP
DISPLAY
A.DUB
T
ZOOM
W
– VOLUME +
RESET
MENU
P.B.DIGITAL
SELECT
STORE
OFF/ON
REW/⊟
PLAY
FF/⊟
SLOW
STILL ADV
PAUSE/ITEM
INDEX
STOP/SET
Panasonic
❾

❾ Playback Digital Effects

Selection Button [SELECT] (➜ 92)
To select the desired digital effect for [EFFECT SELECT] on the [VCR MENU1] Menu.

Store Button [STORE] (➜ 94)
To store a still picture in memory for the Wipe or Mix Function.

Off/On Button [OFF/ON] (➜ 94)
To suspend the selected digital mode or re-activate it.
To start a Wipe or Mix transition from the still picture stored in memory.



Remote Controller (Continued)

■ Inserting the Button-type Battery
Insert the supplied button-type battery before using the Remote Controller.

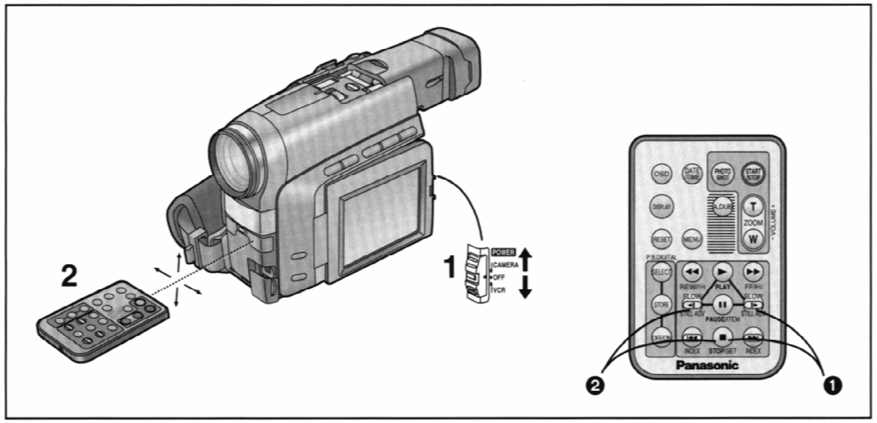
1 **Pull out the Battery Holder while pressing the Stopper ❶.**

2 **Insert the button-type battery with the stamped (+) mark facing upward.**

3 **Insert the Battery Holder into the Remote Controller.**

- When the button-type battery is exhausted, replace it with a new CR2025 battery.
(The life of the battery is about 1 year. However, it depends on the frequency of use.)
- **Keep the button-type battery out of the reach of children.**
- Make sure you insert the battery with its poles correctly aligned.

CAUTION
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



■ Using the Remote Controller

1 Set the [POWER] Switch to [CAMERA] or [VCR].
When you want to perform recording operations, set the switch to [CAMERA]; and when you want to perform playback operations, set it to [VCR].

2 Aim the Remote Controller at the Remote Control Sensor on the Movie Camera and press the appropriate button.
Distance to the Movie Camera: Less than 5 metres.
Angle: Approximately 15° up, down, left and right from centre axis.

- The operative range described above is valid for using the Remote Controller indoors.
  When using it outdoors or under strong lights, it may not work correctly even within the above range.
- Within a distance of about 1 metre, it is also possible to use the Remote Controller from the side (LCD Monitor side).

Selecting the Remote Controller Mode

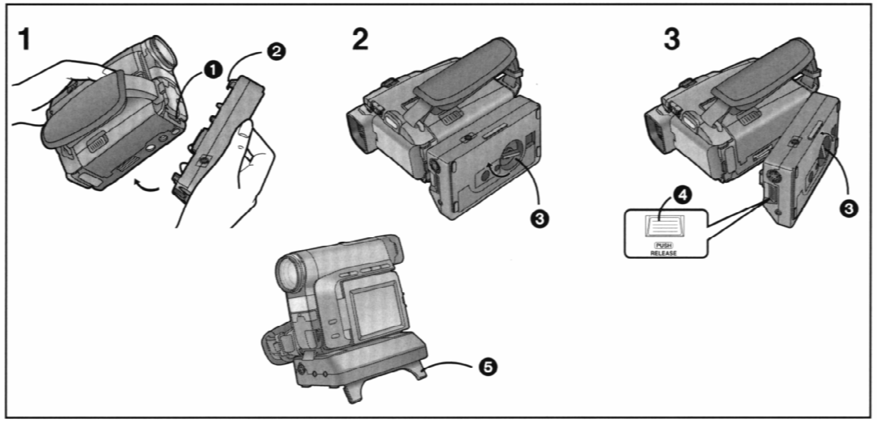
When using two Movie Cameras at the same time, selecting different Remote Controller Modes makes it possible to operate them separately.

- If the Remote Controller Mode set on the Movie Camera and on its Remote Controller are not matched, the [REMOTE] Indication appears.
- Replacing the button-type battery in the Remote Controller automatically resets it to the [VCR1] Mode.
- Set [REMOTE] on the Menu to the desired Remote Controller Mode.

Setting to Be Made on the Movie Camera:
Set [REMOTE] on the [CAMERA MENU3] Menu or on the [VCR MENU2] Menu to the desired Remote Controller Mode.

Setting to Be Made on the Remote Controller:

[VCR1]:	Press the [I▶] Button and [■] Button simultaneously. ❶
[VCR2]:	Press the [◀I] Button and [■] Button simultaneously. ❷



Using the Output Terminal Box [AV ONE TOUCH STATION]

When you want to connect the Movie Camera to a TV for playback or to other video equipment for editing and other purposes, attach the Output Terminal Box [AV ONE TOUCH STATION].

Attaching the Output Terminal Box [AV ONE TOUCH STATION]

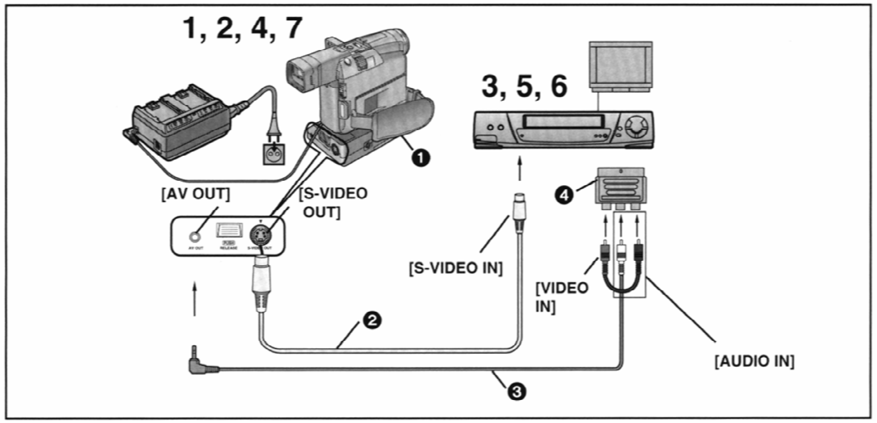
1 Insert the protruding hook ❷ of the Output Terminal Box [AV ONE TOUCH STATION] into the groove ❶ on the front of the Movie Camera and attach the Output Terminal Box in the direction of the arrow until it locks with a click.

2 Fasten the locking screw ❸ to attach the Output Terminal Box securely.

Removing the Output Terminal Box [AV ONE TOUCH STATION]

3 Loosen the locking screw ❸ and remove the Output Terminal Box while pressing the [PUSH RELEASE] Button ❹.
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

Stand
For easier viewing of the playback picture on the LCD Monitor when placing the Movie Camera on a table, etc., you can extend the Stand ❺ on the underside of the Box. This automatically extends an additional support on the opposite side of the Output Terminal Box.



Copying onto an S-VHS (or VHS) Cassette (Dubbing)

You can copy the picture and sound recorded on this Movie Camera onto an S-VHS or VHS cassette in a home video recorder.

After making the connections shown above, perform the necessary operations.

- Before copying, be sure to press the [OSD] Button on the Remote Controller (**➜ 100**) so that no indications are visible. Otherwise, the displayed tape counter and function indications are also copied.

Movie Camera:

1 Set the [POWER] Switch to [VCR].
While pressing the centre button, slide the switch to [VCR].

2 Insert the recorded cassette.

VCR:

3 Insert an unrecorded cassette with intact erasure prevention tab.
As some settings (external input, tape speed, etc.) on the VCR are necessary, please refer to your VCR's operating instructions.

Movie Camera:

4 Press the Play Button [▶] to start playback.

VCR:

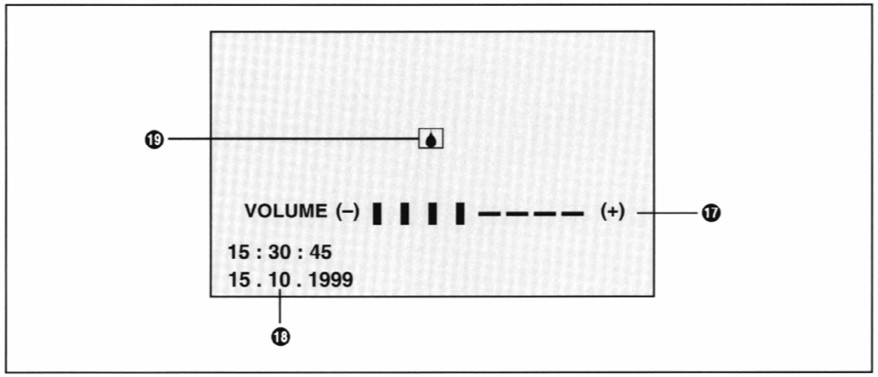
5 Start recording.

6 Press the Pause or Stop Button to stop recording.

Movie Camera:

7 Press the Stop Button [■] to stop playback.

❶ Output Terminal Box [AV ONE TOUCH STATION]
❷ S-Video Cable
❸ AV Cable
❹ 21-Pin Adaptor



⑰ Sound Volume (➜ 46)
Use this indication to adjust the volume of the playback sound from the built-in speaker.
Set the [POWER] Switch to [VCR] and keep the [PUSH] Dial pressed until the [VOLUME] Indication appears.

⑱ Date and Time (➜ 46)
The time is indicated in the 24-hour system.

⑲ Warning/Alarm
When any of the following indications lights or flashes, confirm the condition of the Movie Camera.

[💧]: Condensation has occurred. **(➜ 148)**
📼: The erasure prevention slider of the inserted cassette is open (set to [SAVE]).
Audio dubbing was attempted on an unrecorded (blank) part of the tape.
No cassette is inserted.
🔋: The built-in battery is discharged. **(➜ 140)**
⊗: The video heads are dirty.
📼 END: During recording, the tape has reached its end.
REMOTE: Wrong Remote Controller Mode is selected. **(➜ 110)**
PRINTER ERROR: [AUTOPRINT] on the [VCR MENU2] Menu was set to [ON] even though no printer is connected to the Movie Camera.
UNPLAYABLE TAPE (OTHER FORMAT): Playback was attempted on a part of a tape recorded in a different Format.
UNABLE TO A. DUB (LP RECORDED): Audio dubbing is not possible because the original recording was made in the LP Mode.

Before Requesting Service (Problems & Solutions)

Power Supply

P1: The Movie Camera does not turn on.
S1: Is the Battery or the AC Adaptor connected correctly? Confirm the connection. **(➜ 16)**

P2: The Movie Camera has turned off automatically.
S2: If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. **(➜ 30)**

P3: The Movie Camera quickly turns off.
S3-1: Is the Battery discharged? When the Remaining Battery Power Indication is flashing or the [▭] Indication is displayed, the Battery is discharged. Charge the Battery or attach a fully charged Battery. **(➜ 18, 172)**
S3-2: Has condensation formed? If the Movie Camera is brought from a cold to a warm place, condensation may form inside. In this case, the Movie Camera automatically switches off and no operation can be performed except taking out the cassette. Wait until the Condensation Indication disappears. **(➜ 148)**

Battery

P1: The Battery discharges quickly.
S1-1: Is the Battery fully charged? Charge it until all 3 Charge Lamps on the AC Adaptor light. **(➜ 18)**
S1-2: Are you using the Battery in a place where the temperature is very low? The ambient temperature greatly influences the Battery's performance. Its operation time becomes shorter in a cold place. **(➜ 152)**
S1-3: Has the Battery reached the end of its service life? The service life of the Battery is limited. It depends on the way the Battery is used, but when the operation time even after proper charging is too short for normal use, the service life of the Battery has reached its end.
P2: The Battery cannot be charged.
S2: If the DC Input Cable is connected to the AC Adaptor, charging is not possible. Disconnect the DC Input Cable.

Normal Recording

P1: Recording cannot be started even though the Movie Camera is supplied with power and the cassette is inserted correctly.
S1-1: Is the erasure prevention slider of the cassette open? If it is open (set to [SAVE]), recording is not possible. **(➜ 22)**
S1-2: Has the tape reached its end? Insert a new cassette. **(➜ 22)**
S1-3: Is the Movie Camera turned on? **(➜ 30)**
S1-4: Is the [POWER] Switch set to [CAMERA]? When it is set to [VCR], recording is not possible. **(➜ 30)**
S1-5: Is the Condensation Indication [[💧]] displayed? When condensation has formed, no functions except taking out the cassette can be operated. Wait until the Condensation Indication disappears. **(➜ 148)**

Other Recording

P1: The picture on the LCD Monitor/in the Finder suddenly stands still for a few seconds.
S1: Did you press the [PHOTO SHOT] Button? If you press the [PHOTO SHOT] Button, a still picture is recorded for approximately 7 seconds. After approximately 7 seconds, the Movie Camera switches back to the Recording Pause Mode. **(➜ 38)**

P2: The Auto Focus Function does not work.
S2-1: Is the Manual Focus Mode selected? If you select the Auto Focus Mode, the focus is adjusted automatically. **(➜ 86)**
S2-2: Is the subject or recording situation suitable for the Auto Focus Mode? The Auto Focus Function does not work correctly for some kinds of subjects and recording situations. In this case, use the Manual Focus Mode to adjust the focus. **(➜ 86)**

Editing

P1: Audio dubbing cannot be performed.
S1-1: Is the erasure prevention slider of the cassette open? If it is open (set to [SAVE]), editing is not possible. **(➜ 22)**
S1-2: Are you trying to edit parts of the tape recorded in the LP Mode? As the tracks recorded in the LP Mode are narrower than the heads, audio dubbing is not possible. **(➜ 24, 96)**

Indications

P1: The Time Code becomes incorrect.
S1: In the Slow Motion Playback Mode in reverse direction, the counter of the Time Code Indication may not be stable, however, this is not a malfunction.

P2: The Remaining Tape Time Indication disappears.
S2: If you record a still picture in the Photoshot Mode, the Remaining Tape Time Indication may disappear temporarily. However, if you switch the Movie Camera over to the Normal Recording Mode, it appears again.

P3: The Remaining Tape Time Indication does not match the actual remaining tape time.
S3-1: If scenes of less than 15 seconds are recorded successively, the remaining tape time is not indicated correctly.
S3-2: The Remaining Tape Time Indication may show a remaining tape time that is 2–3 minutes shorter than the actual remaining tape time.

Playback (Picture)

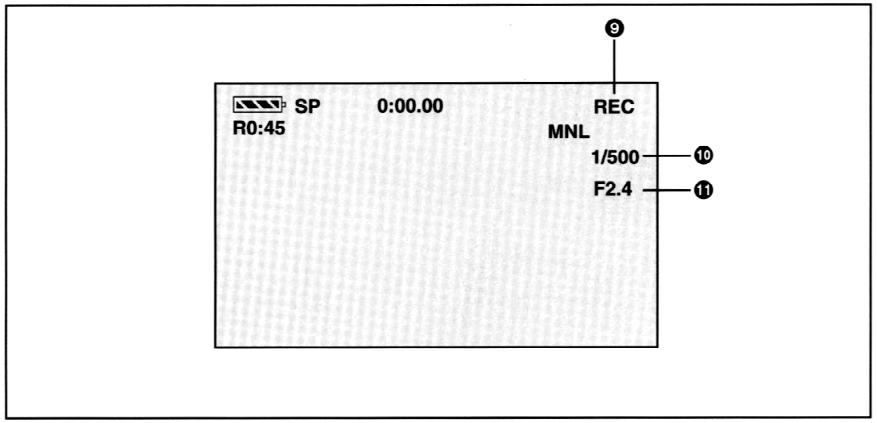
P1: No playback picture is reproduced when pressing the Play Button [▶].
S1: Is the [POWER] Switch set to [VCR]? When it is set to [CAMERA], no playback function can be operated. **(➜ 46)**

P2: Mosaic-like patterns appear in the picture during Cue, Review or Slow Motion Playback.
S2: This phenomenon is a characteristic of the digital video system. This is not a malfunction. **(➜ 48)**

P3: I want to play back the picture on a TV.
S3: If you attach the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera, you can connect the Movie Camera to a TV. **(➜ 54)**

P4: The Movie Camera is correctly connect to a TV, but no playback picture is reproduced.
S4: Did you select "Video Input" on the TV? Carefully read the operating instructions for your TV and select the channel that matches the input sockets used for connection.

P5: The playback picture is not reproduced clearly.
S5: Are the video heads on the Movie Camera dirty? If the video heads are dirty, the picture cannot be played back clearly.



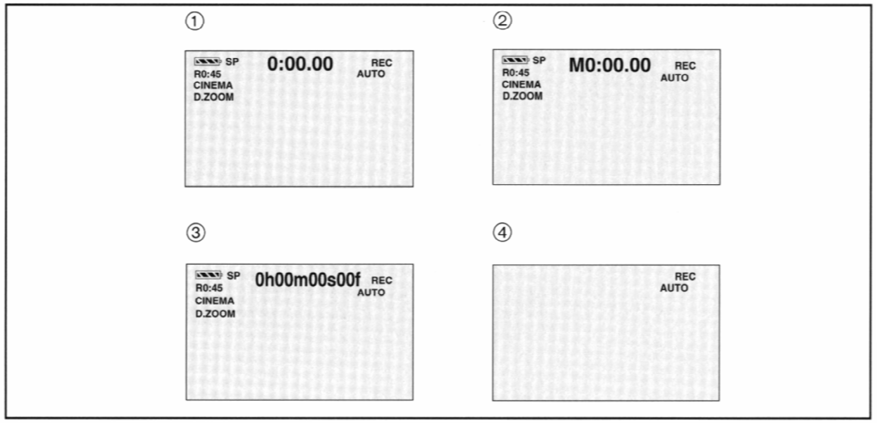
⑨ Tape Run Indications

REC:	Recording **(→ 30)**
PAUSE:	Recording Pause **(→ 30)**
▷:	Playback **(→ 46)**/Camera Search in forward direction **(→ 58)**
◁:	Camera Search in reverse direction **(→ 58)**
▮▮:	Still Playback **(→ 52)**
▷▷:	Fast-forward/Cue Playback **(→ 48)**
◁◁:	Rewind/Review Playback **(→ 48)**
▮▷/◁▮:	Slow Playback in forward direction/ Slow Playback in reverse direction **(→ 50)**
▮▮▷/◁▮▮:	Still Advance Playback in forward direction/Still Advance Playback in reverse direction **(→ 52)**
▷▷▮/▮◁◁:	Index Search in forward direction/ Index Search in reverse direction **(→ 62)**
CHK:	Recording Check **(→ 32)**
A.DUB ▷:	Audio Dubbing **(→ 96)**
A.DUB ▮▮:	Audio Dubbing Pause **(→ 96)**
PHOTO:	Recording in the Photoshot Mode **(→ 38)**
BLANK:	Blank Search **(→ 60)**
R ▷:	Repeat Playback **(→ 46)**

- When recording with the LCD Monitor facing forward using the Mirror Mode, only the Remaining Battery Power Indication, the Recording Indication [●] and the Recording Pause Indication [●▮▮] are displayed.

⑩ Shutter Speed
When you manually adjust the shutter speed, this indication is displayed. **(→ 88)**

⑪ Iris Value (F Number)
When you manually adjust the iris, this indication is displayed. **(→ 90)**



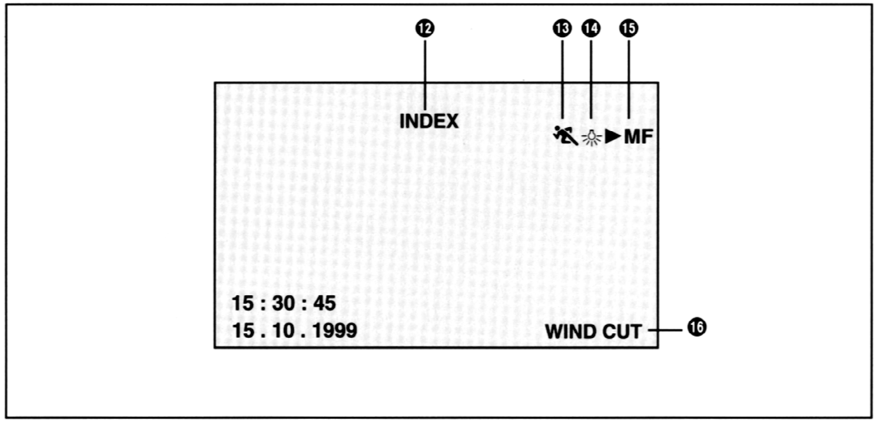
Changing the Indications
By changing the setting for [DISPLAY] on the [CAMERA MENU2] Menu **(→ 132)** or [VCR MENU2] Menu **(→ 136)**, or by repeatedly pressing the [DISPLAY] Button on the Remote Controller **(→ 100)**, the Counter Display Mode can be changed in the order shown in the above illustrations ①–④.

① Tape Counter Indication

② Tape Counter Indication with activated Memory Stop Indication

③ Time Code Indication

④ No Indication
(In this mode, only the Tape Run Indications, Warning/Alarm Indications, Date/Time Indications, Programme AE Mode Indications, Manual Focus Mode Indications, White Balance Mode Indications, and Zoom Magnification Indication can be displayed.)



⑫ Index (→ 62)

INDEX:	The [INDEX] Indication flashes for a few seconds while an index signal is being recorded.

Search Number (→ 66)

S1:	The figure indicates which number of scene ahead from the present scene is to be played back.

⑬ Programme AE Mode (→ 70)
The Programme AE Function offers the following settings:

🏃 :	Sports Mode
👥 :	Portrait Mode
🕯:	Low Light Mode

⑭ White Balance Mode (→ 82)
The White Balance Mode offers the following possible settings:

☼:	Indoor Mode (recording under incandescent lamp)
☀:	Outdoor Mode
▲:	Last manually adjusted White Balance setting

When the Movie Camera is in the Auto Mode, none of the above 3 indications are displayed.

⑮ Manual Focus (→ 86)
If you select the Manual Focus Mode, the [MF] Indication is displayed.
When the Movie Camera is in the Auto Mode, this indication is not displayed.

⑯ Wind Noise Reduction [WIND CUT]
If you set [WIND CUT] on the [CAMERA MENU2] Menu to [ON], the [WIND CUT] Indication is displayed.

■ Progressive Photoshot Function

This function lets you record still pictures with higher resolution, finer details and smoother image contours than the normal Photoshot Function.

- ●Usually, still pictures recorded with single-CCD Movie Cameras are field still pictures, whose vertical resolution is approximately half of that of frame still pictures, and picture details are not very precise. (1 frame consists of 2 fields.)
- ●When recording moving objects, there is a slight difference between two fields. If these field still pictures are recorded as a frame still picture, it will have broken up image contours.
- ●To record still pictures with smooth contours in excellent picture quality, this Movie Camera is equipped with the Progressive Photoshot Mode featuring:
  an iris that closes like a shutter
  2 field memories

Actual operation:

- Pressing the [PHOTO SHOT] Button
- Closing the iris instantaneously to prevent the next image from entering through the lens
- Storing the same picture data in 2 field memories

As a result, the recorded frame is made up of two fields taken at exactly the same time, and the resolution is approximately 50% higher to ensure a picture with smooth contours.

When you press the [PROGRESSIVE] Button so that the [P] Indication appears, and then press the [PHOTO SHOT] Button, this Movie Camera always records a frame still picture.
However, while the [P] Indication is visible, the following functions cannot be used:

- Digital Zoom
- Digital Effects 1
- Shutter speeds faster than 1/500 s
- Continuous Photoshot

As still pictures recorded in the Progressive Photoshot Mode are extremely sharp and brilliant, they are highly suitable for printing on a Video Printer and for importing into a computer.

When you press the [PHOTO SHOT] Button in the Progressive Photoshot Mode, a click sound can be heard. This is caused by the closing of the iris and is not an indication of malfunction.

- ●During normal recording, the Progressive Photoshot Function cannot be used.

■ Time Code

Time Code signals are the data which indicates the time in hours, minutes, seconds and frames (25 frames/sec). Having this data included in the recording gives every single picture on the tape its own address.

- ●The Time Code is automatically recorded as part of the sub code with every recording you make.
- ●When you insert a new (previously unrecorded) cassette, the Time Code automatically starts from zero. If you insert a recorded cassette, the Time Code continues where the time code of the last previous scene stopped. (In this case, the zero indication [0h 00m 00s 00f] may appear after inserting the cassette, but when the recording starts, the Time Code records from the previous value.)
- ●You cannot reset the Time Code to zero.
- ●In playback modes other than the Normal Playback Mode, the Time Code may not be displayed (or not be correct).
- ●Unless the Time Code is recorded continuously from the beginning of the tape, precise editing may not be possible. To ensure that the Time Code is recorded without interruption, we recommend that you use the Camera Search Function (**→ 58**) or Blank Search Function (**→ 60**) before starting to record a new scene.

■ Memory Stop Function

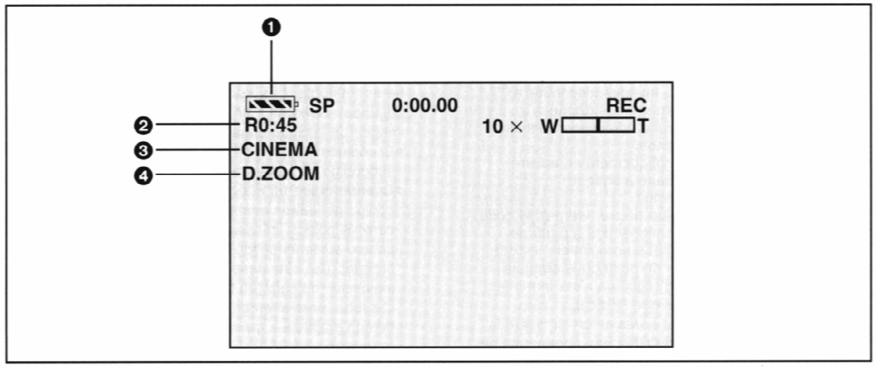
The Memory Stop Function is convenient for the following operations.

Rewinding or fast-forwarding the tape to a desired position

1. **Reset the Tape Counter to zero at the tape position from which you want to play back later. (→ 100, 134)**
2. **Set [DISPLAY] on the [CAMERA MENU2] Menu or [VCR MENU2] Menu to [MEMORY].**
3. **Start playback or recording.**
4. After playback or recording is finished:
   Set the [POWER] Switch to [VCR].
5. **Rewind the tape.**
   The tape automatically stops approximately at the position at which you reset the counter to zero.

Stopping the editing automatically in the audio dubbing

1. **Reset the Tape Counter to zero at the tape position at which you want the editing to stop.**
2. **Set [DISPLAY] on the [CAMERA MENU2] Menu or [VCR MENU2] Menu to [MEMORY].**
3. **Play back a still picture at the point at which you want the audio dubbing to start.**
4. **Start the audio dubbing. (→ 96)**
   The audio dubbing automatically stops approximately at the position at which you reset the counter to zero.



Indications on the LCD Monitor/in the Finder

❶ Remaining Battery Power
As the remaining battery power decreases, the indication changes as follows:
▰▰▰▰→▰▰▰→▰▰→▰→▭
When the battery is completely discharged, the ▰ (▭) Indication flashes.
(When you are using the AC Adaptor, the ▰▰▰▰ Indication may appear, however, this has no meaning in this case.)

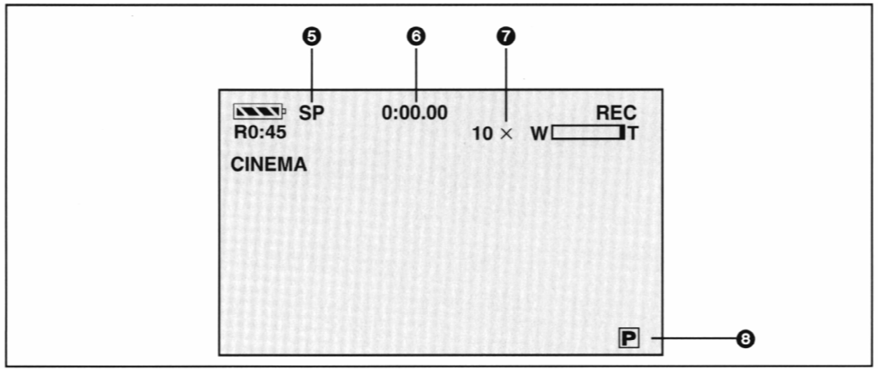
❷ Remaining Tape Time
The remaining tape time is displayed in minutes.
(When it becomes less than 3 minutes, the indication starts to flash.)

- ●If a recording lasts less than 15 seconds, the remaining tape time cannot be displayed correctly.
- ●The displayed remaining tape time may be shorter than the actual remaining tape time.

❸ Cinema Mode (→ 42)
When recording in the Cinema Mode, this indication is displayed.

❹ Digital Zoom (→ 36)
When the Digital Zoom Function is activated, this indication is displayed.

Digital Effects (→ 74)
When a digital effect is activated, the corresponding indication is displayed.



❺ Recording Speed Mode (→ 24)
The selected Recording Speed Mode is displayed.
SP: Standard Mode
LP: Long-play Mode

❻ Tape Counter, Time Code (→ 178)
The Tape Counter, Memory Stop Function or Time Code Indication is displayed.

❼ Zoom Magnification (→ 36)
When you push the [W/T] Zoom Lever up or down, the Zoom Magnification Indication and the Zoom Gauge are displayed.

Recording Mode (→ 30, 70, 82, 84, 86, 88, 90)

AUTO:	This appears when the Mode Selector Switch is set to [AUTO].
MNL:	This appears when the Mode Selector Switch is set to [MNL].

Super Image Stabilizer (→ 44)

▣:	When the Super Image Stabilizer Function is activated, this indication is displayed.

Audio Recording Mode (→ 96)

12 bit/16 bit:	The indication of the Audio Recording Mode that was selected for recording is displayed during playback.

Automatic Printing (→ 122)

AUTOPRINT:	This indication is displayed when the Auto Print Function is being used.

❽ Progressive Photoshot Mode (→ 40)
When you press the [PROGRESSIVE] Button, the [P] Indication appears.

■ Focus

If you look at an object through a magnifying glass and move it closer or further away from your eye, you will reach a point where the object becomes clearly visible. Being focused or in focus means that the subject can be seen with optimum clarity and sharpness.

Human Eyes

Human eyes have lenses as well, and when we look at objects at different distances, the shape of these lenses changes automatically so that we can always see these objects clearly.

Movie Camera

The image of the subject enters the Movie Camera through the lens and is converted into an electric signal (video signal) for recording onto magnetic tape. The focus is adjusted either manually or automatically by moving a focusing lens.

Auto Focus Adjustment

The Auto Focus System automatically moves the internal focusing lens forward or backward and adjusts the focus so that the subject can be seen clearly.
The Auto Focus Adjustment has the following characteristics:

- It adjusts until the vertical contours of the subject are as sharp and clean as possible.
- It adjusts the focus on the subjects with strong contrast.
- It adjusts the focus on the subject in the centre of the LCD Monitor or Finder.
  Unlike human eyes, the lens of the Movie Camera cannot instantaneously change the focus from a nearby to a distant subject and vice versa.

Lens Unit

The lens construction used in this Movie Camera generates some clicking noise if the Movie Camera is rocked up and down while it is turned off. This is not a malfunction of the lens unit. This noise does not occur when the Movie Camera is turned on.

For the following subjects and recording situations, the Auto Focus System cannot provide precise adjustment.
Use the Manual Focus Mode instead. (→ 86)

① **Recording subjects with a part of it near the Movie Camera and another part far away from it**
As the Auto Focus adjusts on the centre part of the image, it is often impossible to bring the nearby and distant parts of the subject into focus.
When you want to record a person with a distant mountain in the back, it is not possible to focus on both.

② **Recording subjects behind glass covered with dirt or dust**
As the focus is adjusted on the dirty glass, the subject behind the glass is out of focus. When recording a subject across a street on which cars are running, the focus may be adjusted on the cars.

③ **Recording subjects in dark surroundings**
As the amount of light information entering through the lens is greatly reduced, the Movie Camera cannot adjust the focus precisely.

④ **Recording subjects surrounded by objects with shiny surfaces or much light reflection**
As the Movie Camera adjusts the focus on objects with shiny surfaces or much light reflection, the subject may go out of focus.
Therefore, when recording at a lake or the sea, evening scenes, fireworks, or under special types of lighting, the subject may be out of focus.

⑤ **Recording fast-moving subjects**
As the internal focusing lens is moved mechanically, it cannot follow fast-moving subjects without delay. Therefore, subjects like children running back and forth may temporarily go out of focus.

⑥ **Subjects with weak contrast**
As the Movie Camera adjusts the focus based on vertical contours in the picture, subjects with little contrast such as a white wall may be out of focus.

■ White Balance Adjustment

While most recording with a Movie Camera is probably done outdoors under sunlight, video recording is also done very often under artificial light sources, both indoors and outdoors. However, each of these light sources gives the subject slightly different colours.

Human Eyes

Human eyes can easily adjust to different kinds of lighting and see an object with the same colours even under different lighting.

Movie Camera

Unlike human eyes, the Movie Camera does not have the innate ability to adapt to changes in lighting, and they influence the colours being recorded. Therefore, depending on the light source, the picture would be recorded with a bluish or reddish tint. To minimise the influence of the lighting on the colours of the subject, an adjustment called White Balance Adjustment is necessary.

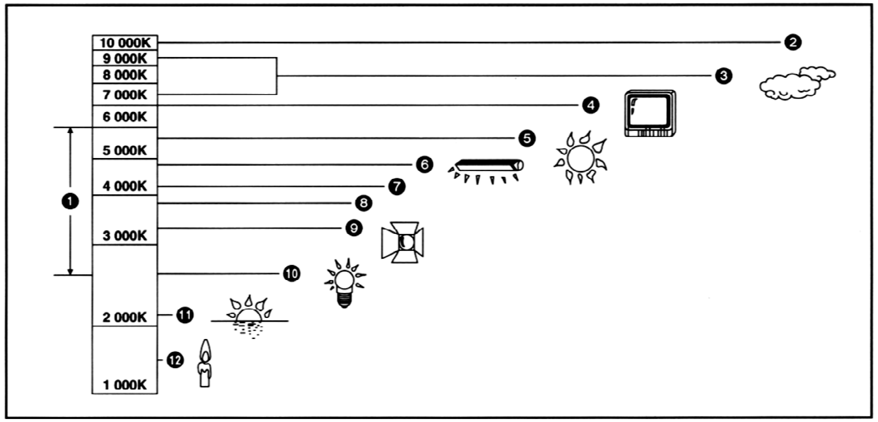
White Balance Adjustment

The White Balance Adjustment determines the colour of the light and adjusts the colours so that white remains pure white. As white is the basic colour of the entire colour spectrum, if white is reproduced correctly, the other colours are correct and natural, too.

Auto White Balance Adjustment

This Movie Camera stores the optimum settings for several common light sources in memory. The Movie Camera judges the recording situation by determining the tint of the light received through the lens and by the White Balance Sensor (**→ 12**), and it selects the setting for the most similar tint. This function is called Auto White Balance Adjustment.
However, as the white balance settings for only a few light sources are stored in memory, the white balance is not correctly adjusted for other lighting conditions.

For the range of different types of lighting within which the Auto White Balance Function can provide precise adjustment, refer to the chart (**→ 166**). For recording under lighting conditions outside this range, the Auto White Balance Function does not work correctly, and the recorded picture has a red or blue cast. However, the same also applies, if the subject is lit by more than one light source, even if these light sources are within this range.



■ Colour Temperature

Every light source has its own colour temperature measured in Kelvin (K). The higher the Kelvin value, the more bluish the light; the lower the value, the more reddish the light. The Kelvin value is related to the tint of the light, but not directly to its brightness.
The range ① indicated in the illustration above shows the light sources for which this Movie Camera can provide precise white balance adjustment and, therefore, natural colours in the recorded pictures, when using the Full Auto Mode. For light sources outside this range, adjust the white balance manually (**→ 84**). Also, additional lighting may be necessary.

① Control range of this Movie Camera's Auto White Balance Adjustment Mode
② Blue sky
③ Cloudy sky (Rain)
④ TV screen
⑤ Sunlight
⑥ White fluorescent lamp
⑦ 2 hours after sunrise or before sunset
⑧ 1 hour after sunrise or before sunset
⑨ Halogen light bulb
⑩ Incandescent light bulb
⑪ Sunrise or sunset
⑫ Candlelight

■ Precautions for Storage

Before Storing the Movie Camera, Take out the Cassette and Remove the Battery.

Store all equipment in a dry place where the temperature remains relatively constant. (Recommended temperature is 15°C–25°C and recommended relative humidity is 40%–60%.)

Movie Camera

- Wrap it with a soft cloth to prevent dust from entering.

Battery

- Extremely low or high temperature shortens the Battery life.
- Storing it in places with oily smoke and a lot of dust could cause the terminals to get rusty, and this can result in malfunction.
- **Do not allow metal objects (such as necklaces and hair pins) to touch the battery terminals. Short-circuiting may occur and generate heat, and touching it in this condition could inflict serious burns.**
- Store the Battery in discharged condition. If you store the Battery for a long time, we recommend that you charge it once a year and completely use up the charge before storing it again in discharged condition.

Cassette

- Rewind the tape to its beginning before storing. Leaving the cassette with the tape stopped halfway for more than 6 months (depending on the storing condition) loosens the tape. Be sure to rewind it to the beginning.
- Put the cassette in its case to store it. Dust, direct sunlight (ultraviolet rays) and humidity could damage the tape. Dust contains hard mineral particles and cassettes with dust damage the video heads and other parts of the Movie Camera. Make it a habit to always put the cassette back into its case.
- Completely wind the tape forward and then rewind it once every half year. Leaving the cassette for more than a year without winding/rewinding it may deform the cassette because of stretching and shrinking of the tape due to changes in temperature and humidity. Also, the tape may stick together.
- Do not place the cassette near strongly magnetized objects or equipment.
- The tape surface is coated with microscopic magnetic particles and they record signals. Such objects as magnetic necklaces and toys have stronger magnetic force than commonly thought, and this could erase the recorded contents and cause noise in picture and sound.

■ LCD Monitor/Finder/MC Protector/ Shoe Adaptor/Microphone Socket

LCD Monitor

- In places where big changes in temperature occur, condensation may form on the LCD Monitor. Wipe it with a soft, dry cloth.
- When the Movie Camera is very cold when it is turned on, the picture on the LCD Monitor is initially a little darker than normally. However, as the internal temperature rises, the LCD Monitor regains its normal brightness.
- Extremely high precision technology is employed to produce the LCD Monitor screen featuring a total of approximately 180,000 pixels. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

Finder

- Extremely high precision technology is employed to produce the Finder screen featuring a total of approximately 160,000 pixels. The result is more than 99.99% active pixels, with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.
- Do not leave the Finder or the Lens aimed at the sun. This could seriously damage internal parts.

MC Protector

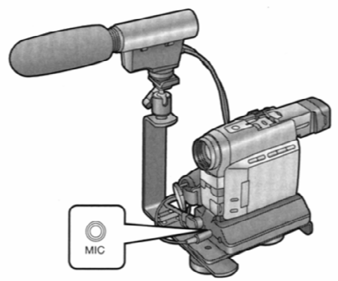
- When you want to attach a filter or conversion lens with a diameter of 30.5mm, be sure to first remove the MC Protector by turning it counterclockwise. When you slide the [W/T] Zoom Lever toward [W] after attaching a filter or conversion lens, the four corners of the picture may become dark (vignetting effect).
- If you attach both a filter and a conversion lens, the four corners of the picture may become dark (vignetting effect). For details, please also read the operating instructions of the accessory being used.

Shoe Adaptor

- If you want to attach the External Microphone (VW-VM1E; optional), etc. to the Movie Camera, the Shoe Adaptor (VW-SK11E; optional) is necessary.

Microphone Socket

- You can connect the External Microphone to the [MIC] Socket on the Output Terminal Box [AV ONE TOUCH STATION]. This automatically deactivates the Movie Camera's built-in microphone. •@



Glossary

■ Digital Video System

In the digital video system, picture and sound are converted into digital signals and recorded onto the tape.
This completely digital recording allows recording and playback of picture and sound with minimum quality deterioration.
In addition, such data as Time Code, Date and Time are also automatically recorded as digital signals.

Features

- Superior picture resolution
- Excellent signal-to-noise ratio
- Stable pictures
- Minimised quality deterioration in dubbing
- Minimised cross colour distortion
- PCM digital sound
- No picture deterioration in LP Mode
- 6.35 mm-wide tape
- Compact cassette with long recording time
- Minimised quality deterioration in editing
- Time Code editing

Compatibility with S-VHS or VHS Cassettes

As this Movie Camera uses a digital method for recording picture and sound, there is no compatibility with conventional S-VHS or VHS video equipment using analog recording methods.
In addition, the size and shape of the cassette are completely different.

Compatibility with Output Signals

As the video and audio signals output from the audio and video output sockets are analog—the same as in conventional video systems—you can connect this Movie Camera to your S-VHS or VHS VCR or TV for playback.

PCM Digital Sound

For recording of the sound, this Movie Camera offers the choice between two different PCM Audio Recording Modes.

- 16 bit, 48 kHz, 2 channels
- 12 bit, 32 kHz, 4 channels

The "16 bit, 48 kHz, 2 channels" Mode offers superior recording sound quality.
The "12 bit, 32 kHz, 4 channels" Mode lets you record the original sound in stereo on two channels and the dubbed sound in stereo on two separate channels.

Sub Code

The digital recording system offers the added capability of recording sub code containing various data.
The following data is recorded as sub code on this Movie Camera:

- Time code
- Recording date and time
- Index signals for locating still images recorded in the Photoshot Mode
- Index signals for locating the beginning of scenes marked with index signal

Do not spray insecticide or volatile agents on the Movie Camera.

- Such agents could deform the body and cause the surface coating to peel off.
- Do not leave the Movie Camera in direct contact with rubber or plastic products for a long time.

Do not use benzine or thinner for cleaning.

- They could deform the body and cause the surface coating to peel off.
- Before cleaning, remove the Battery or unplug the AC Mains Cable from the AC mains socket.
- Wipe the Movie Camera with a soft, clean cloth. To remove persistent stains, wipe with a cloth moistened with mild detergent diluted with water, and then finish with a dry cloth.
- When storing or transporting the Movie Camera place it in a softly padded bag or case to prevent the coating of the camera body from wearing off.

After use, always take out the cassette and remove the Battery or unplug the AC Mains Cable from the AC mains socket.

- If you leave the cassette in the Movie Camera, the tape can become loosened and damaged.
- If you leave the Battery attached to the Movie Camera for a long time, the voltage level may drop excessively so that the Battery cannot be used any more even after charging.

■ Condensation

Determining Whether Condensation Has Formed Inside and Remedy for Condensation

If the Condensation Indication flashes after you turn on the Movie Camera, condensation has formed inside the Movie Camera. In this case, the Movie Camera automatically switches off after a few seconds. Remedy as follows:

1 Take out the cassette.
All other functions do not work. Depending on the amount of condensation, it may not be possible to take out the cassette. In this case, wait 2–3 hours before taking out the cassette.

2 Leave the Cassette Compartment open and wait for 2–3 hours.
The required time depends on the amount of condensation and the ambient temperature.

3 After 2–3 hours, turn the Movie Camera on and check if the Condensation Indication is not displayed.
Even if the Condensation Indication is no longer displayed, wait 1 more hour for added safety before using the Movie Camera again.

Pay Attention to Condensation Even Before the Condensation Indication Appears.

- As condensation forms gradually, the Condensation Indication may not appear for the first 10–15 minutes after condensation has formed inside.
- In an extremely cold place, the condensation could freeze and turn into frost. In such a case, it takes an additional 2–3 hours for the frost to first melt into condensation and then to be dissolved.

Remedy for a Fogged-up Lens

Set the [POWER] Switch to [OFF] and leave the Movie Camera in this condition for about 1 hour. When the lens has reached about the same temperature as its surroundings, it automatically clears up.

■ Video Head Clogging and Remedy

When the video heads (which contact the tape) are dirty, the playback picture contains mosaic-like patterns or the whole screen becomes black. If they become even more dirty, the recording performance deteriorates and in the worst case, recording may not be possible at all.

Causes of Dirty Video Heads

- A lot of dust in the air
- High-temperature and high-humidity environment
- Damaged tape
- Long-time use

Using the Mini-DV Format Digital Video Head Cleaner (not supplied)

1. **Insert the Head Cleaner into the Movie Camera in the same way as a video cassette.**
2. **Press the Play Button [▶], and after approximately 20 seconds press the Stop Button [■]. (Do not rewind the tape.)**
3. **Take out the Head Cleaner. Insert a video cassette, perform recording and then play it back to check the picture.**
4. **If the picture is still not clear, repeat above operation steps 1 - 3. (Do not use the Head Cleaner more than 3 times in succession.)**

Notes:

- Do not rewind the tape in the Head Cleaner after every use. Rewind it only after the tape has reached its end, and then use it again in the same way from the beginning.
- If the video heads again become clogged with dirt soon after cleaning, this might be caused by a damaged tape. In this case, stop using that cassette immediately.
- Be careful not to clean the video heads too much. (Too much cleaning could cause excessive wear to the video heads. If the video heads get worn, the picture is not played back clearly even after cleaning.)
- If using the Head Cleaner does not clear the video head clogging, the Movie Camera requires cleaning or repairing by a service centre.
  Please consult with your dealer.
- This Video Head Cleaner is available from service centres.

Periodic Inspection

To ensure optimum picture quality, we recommend that you have worn-out parts such as video heads replaced after approximately 1000 hours of use. (However, this depends considerably on the conditions of use such as temperature, humidity and dust.)

■ Optimum Use of the Battery

Special Characteristics of the Battery

This Battery is a rechargeable lithium-ion battery. Its ability to generate electric energy is based on an internal chemical reaction. This reaction is easily influenced by ambient temperature and humidity, and the useful operation time that the Battery can provide becomes shorter at high and low temperatures. When used in extremely cold surroundings, the Battery may only be able to provide approximately 5 minutes of operation time. If the Battery becomes extremely hot, a protection function is activated and prevents the use of the Battery for some time.

After Use, Always Remove the Battery.

Be sure to remove the Battery from the Movie Camera. (If it is attached to the Movie Camera, a small amount of electric current is consumed even if the Movie Camera is turned off.) Leaving the Battery attached to the Movie Camera for a very long time could cause it to become excessively discharged, so that it cannot be used any more even after charging.

Keep the Battery's Terminals Clean.

Be careful that the terminals (the two small round openings) do not get plugged up with dust, dirt or other substances.
If you accidentally drop the Battery, confirm that the Battery itself and the terminals are not deformed. Attaching a deformed Battery to the Movie Camera or to the AC Adaptor could damage the Movie Camera or the AC Adaptor.

Discarding a Battery That Has Become Unusable

- The usable life of the Battery is limited.
- Do not throw the Battery in a fire because it could explode.

■ When the Charge Lamps on the AC Adaptor Flash as Warning

If the ambient temperature is extremely low or high, the Charge Lamps on the AC Adaptor flash. They also flash when some defect has occurred in the Battery or the AC Adaptor.

When the Charge Lamps Flash Slowly

The Battery is being charged, but charging takes longer than normally.

When Only the [80%] Charge Lamp Flashes

Charging is not possible. Remove the Battery once and wait a few minutes, and then re-attach it again for charging.

When the [50%] and [100%] Charge Lamps Flash Alternately, or When No Charge Lamps Light

Remove and then re-attach the Battery. Or, attach the Battery to the Movie Camera and perform playback (or some other operation) for 10 - 20 minutes. Then remove the Battery and attach it again to the AC Adaptor. If charging is still impossible, some malfunction has occurred in the Battery or the AC Adaptor. Please consult with your dealer.

INITIAL/LOGO		ABBREVIATIONS
	LVL	LPF Switch for Auto Focus
M	M1-3	Motor Coil Terminal 1 to 3
	MA0-5	Microprocessor Address Data 0-5
	Mbps	Megahertz Bit Per Second
	MD	Modulation
	MD0-7	Microprocessor Data 0-7
	MDT0-7	Microprocessor Data 0-7
	ME (TAPE)	Metal Evaporated (Tape)
	MENB	Focus Motor Enable
	MFF	Manual Focus Far
	MFN	Manual Focus Near
	MHSYNC	Monitor Horizontal Sync Signal
	MIC	Memory In Cassette
	MIG	Meta In Gap
	MIX N.R.D.	Non Rec Data Mix
	MOD	Modulation
	MOUT	Mic Out
	MP (TAPE)	Metal Particle (Tape)
	MPEG	Moving Picture Image Cording Experts Group
	MPEG2	Moving Picture Image Cording Experts Group Phase 2
	MRST	Focus Motor Reset
	MSB	Most Signal Bit
	MVSYNC	Monitor Vertical Sync Signal
N	N/F	Near/Far Focus
	N/P	NTSC/PAL
	NB1-3	Base for NPN Transistor
	NC	No Connection
	NC1-3	Corrector of NPN Transistor
	NCLR	Power On Reset
	NCP1	Clamp Pulse
	NCP2+VDH	Clamp Pulse + Horizontal Drive Pulse
	NCP2+VDM	Clamp Pulse + Gate Pulse
	NDE	Non Liner De-Emphasis
	NE	Emitor of NPN Transistor
	NLE	Non Liner Emphasis
	NR	Noise Reduction
	NRD	Non Rec Data
	NRD BLK	Non Rec Data Blanking
	NRD CLK	No Rec Data Clock
	NRE	Read Enable Input (Low Active)
	NWE	Write Enable (Low Active)
O	OB	Optical Black
	OBCNT	Optical Black Control
	OBREF	Reference Voltage for Optical Black Control
	OE	Output Enable
	OFH	Horizontal Counted Down Clock Signal (Reference)
	OFS	Offset
	OP	Operation AMP Output
	OSD	ON Screen Display
	OVL	Overlap Pulse
	OZ	Optical Zoom
P	P SW	Power Switch
	PB1-3	PNP Base 1-3
	PBCTL	Play Back Control
	PBCTL	Pre-Branking Control
	PBH	Head Amp Switch
	PBLK	Pre-Blanking (Pulse)
	PC1-3	Corrector of PNP Transistor
	PCBM	Carrier Balance
	PCH	Phase Compensator (Hall AMP)
	PCI	Phase Compensator (Current)
	PCO	Phase Compensator Out
	PCS	Switching Power Control
	PCV	Phase Compensator (Voltage)
	PE	Emitter of PNP Transistor
	PED	Pedestal
	PEDECNT	Pedestal Control
	PENO	Alarm (L)
	PFP	Pilot Frame Position
	PGA, B	Power Ground A, B
	PGC	Pulse Generator Comparator
	PGI	Pulse Generator Input
	PGMM	Pulse Generator Monostable Multivibrator
	PGO	Output of Pulse Generator AMP
	PMODE	Select Signal for Normal / Wide Screen
	PON	Power On
	POR	Power On Reset
	POSCOM	Common Position
	PREAMP	Pre-AMP
	PREBLK	Pre-Blanking
	PT	Protect for V Voltage
	PWM	Pulse Width Modulation
	PWMB	Pulse Width Modulation Pulse
Q	Q2H	Source Output Select
R	R CTL P	Recorded Control Pulse (+)
	R CTL R	Recorded Control Pulse (–)
	R/B	Read/Busy
	R/L	Direction Control for Data Transmition
	RA	Recording AMP
	RA1	Rec AMP 1
	RAC AC	Rec Audio Current
	RAD	Read Address Data
	RAE	Read Address Enable
	RB	Read Busy
	R-B	R Bias
	RCB	R Carrier Balance
	RE	Read Enable
	RE(F), (S)	Rotary Erase Head Transformer
	REB	R Bias
	REC CC	Rec Current Control
	REC CCNT	Rec Current Control
	RECCTRL	Recording Control Pulse
	RECI	Rec Amp Switch

Playback (Sound)

P1: No sound is played back from the Movie Camera's built-in speaker.

S1: Is the volume set too low? During playback, keep the [PUSH] Dial pressed until the [VOLUME] Indication appears. Then turn the [PUSH] Dial to adjust the volume. **(➜ 46)**

P2: Different sounds are played back together.

S2: [12bit AUDIO] on the [VCR MENU1] Menu is set to [MIX]. Therefore, the original sound and the sound dubbed with audio dubbing are played back together. It is also possible to play them back individually. **(➜ 98)**

P3: The original sound was erased by performing audio dubbing.

S3: If you perform audio dubbing on a recording made in the [16bit] Mode **(➜ 96)**, the original sound is erased. If you want to keep the original sound, be sure to select the [12bit] Mode for the original recording.

P4: **No playback sound is reproduced.**

S4-1: Are you playing back a cassette that was recorded with [AUDIO REC] on the [CAMERA MENU2] Menu set to [12bit]? In this case, make sure that [12bit AUDIO] on the [VCR MENU1] Menu is set to [ST1] **(➜ 98)**.

S4-2: Is the Variable Speed Search Function activated? Press the Play Button [▶] to cancel the Variable Speed Search Function **(➜ 48)**.

Others

P1: The cassette cannot be taken out.

S1-1: Is the Movie Camera supplied with power? Is the AC Adaptor correctly connected or the Battery correctly attached? To remove the cassette, the Movie Camera must be supplied with power, however, it is not necessary to set the [POWER] Switch to [CAMERA] or [VCR].

S1-2: The attached Battery may be discharged. Replace it with a charged Battery.

P2: No operation except taking out the cassette can be performed.

S2: Is the Condensation Indication [💧] displayed? If condensation has formed inside the Movie Camera, it automatically switches off and prevents all operations except taking out the cassette. Wait until the Condensation Indication disappears. **(➜ 148)**

P3: The Remote Controller does not work.

S3-1: Is the button-type battery in the Remote Controller exhausted? If the Remote Controller does not work when you use it near the Remote Controller Sensor on the Movie Camera, the button-type battery is exhausted. Replace it with a new battery. **(➜ 108)**

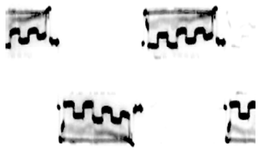
S3-2: Is the correct Remote Controller Mode selected? If the Movie Camera's setting for [REMOTE] on the Menu and the mode selected on the Remote Controller are not matched, operating the Movie Camera with the Remote Controller is not possible and the [REMOTE] Indication is displayed. **(➜ 110)**

❶ CGR-D120 	❷ CGP-D210 	❸ CGR-D220 	❹ CGP-D320 	❺ CGR-D815 	❻ VW-KA7E 	❼ VW-K10E
❽ VW-LW3007E 	❾ VW-LT3014E 	❿ VW-LND30E 	⓫ VW-VMS1E 	⓬ VW-SK11E 	⓭ VZ-CT55E 	⓮ VW-EC500E
⓯ VW-EC1E 	⓰ VW-VT1E 	⓱ VW-DTA1E 	⓲ VW-K5E 	⓳ VW-CD1E 		

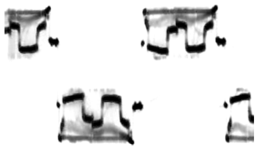
Optional Accessories

❶ Battery Pack (Lithium)
❷ Battery Pack (Lithium)
❸ Battery Pack (Lithium)
❹ Battery Pack (Lithium)
❺ Battery Pack (Lithium)
❻ Car Adaptor Cord
❼ 5-Pin Synchro Cord
❽ Wide Conversion Lens
❾ Tele Conversion Lens
❿ ND Filter
⓫ Stereo Zoom Microphone
⓬ Shoe Adaptor
⓭ Tripod
⓮ Editing Controller
⓯ Editing Controller
⓰ Video Titler
⓱ Personal Computer Connection Kit
⓲ Edit Cable
⓳ DV Cable

- Some accessories are not available in some countries.



FP901-3 STOP
8.4 Vp-p (20µsec./div.)
COLOUR BAR



FP901-4 STOP
8.4 Vp-p (20µsec./div.)
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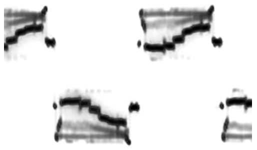

FP901-5 STOP
8.4 Vp-p (20µsec./div.)
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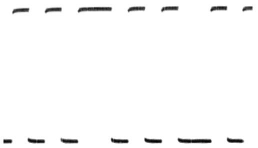
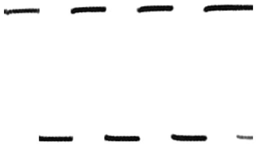
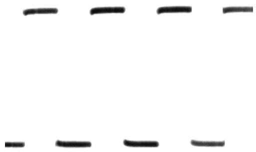


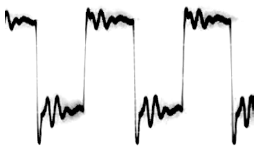
CL906 STOP
4.8 Vp-p (0.1msec./div.)
COLOUR BAR



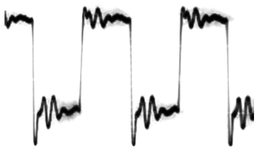
IC902-20 STOP
4.8 Vp-p (50µsec./div.)
COLOUR BAR



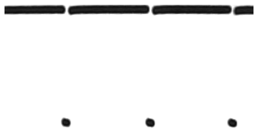
IC902-21 STOP
4.8 Vp-p (50µsec./div)
COLOUR BAR



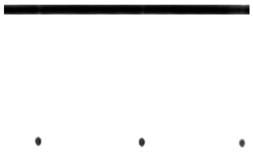
IC902-23 STOP
6.8 Vp-p (0.1µsec./div.)
COLOUR BAR



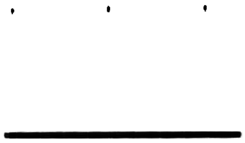
IC902-24 STOP
6.8 Vp-p (0.1µsec./div.)
COLOUR BAR



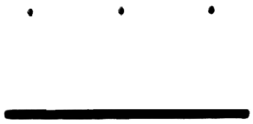
IC902-27 STOP
6.0 Vp-p (20µsec./div.)
COLOUR BAR



IC902-45 STOP
4.8 Vp-p (5msec./div.)
COLOUR BAR



IC904-17 STOP
4.8 Vp-p (5msec./div)
COLOUR BAR



IC904-18 STOP
4.8 Vp-p (5msec./div)
COLOUR BAR